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MOTOR WORLD

Trade Paper Giving the World's Motor New

XXXVII
No. 1

New York, September 25, 1913

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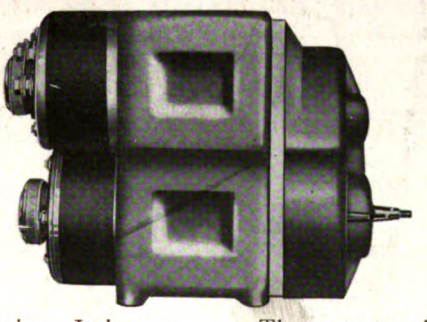
FOR WORLD

The *Spinning*
ELECTRIC Double Deck DISCO

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That starter is The **Spinning Electric** Double-Deck DISCO Starter **which we furnish for 6 or 12 volts.** And, with all its advantages, the Electric Disco is the simplest electric starter built.



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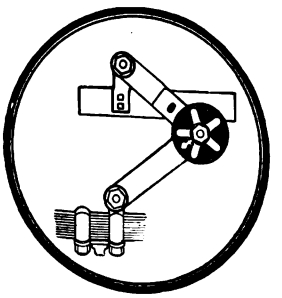
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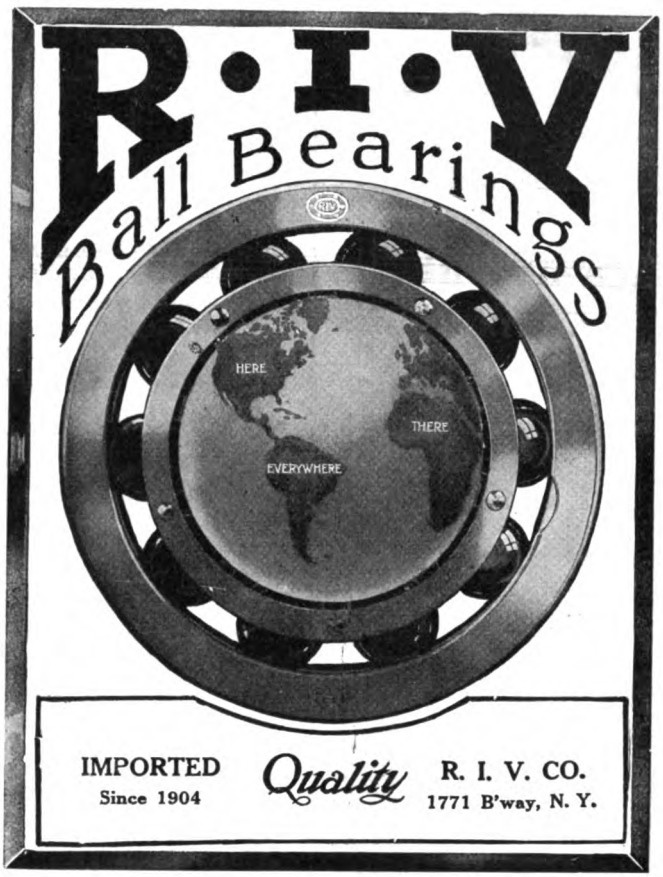
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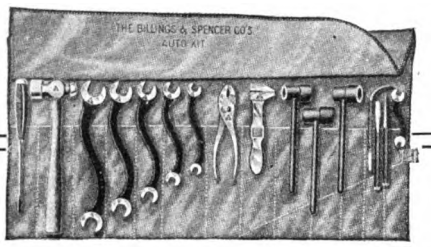
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For this reason the worth of a car may be determined by the Quality and Make of the ball bearings. R. I. V. are Trade Winners.

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, September 25, 1913 No. 1

NYBERG SAYS RECEIVERS ARE DUE TO "ACCOUNT CHASERS"

Claims Sordid Activities of Collection Lawyers Caused His Embarrassment — Two Receivers But Proprietor is Hopeful.

Due, it is declared by Henry Nyberg, to the action of local attorneys seeking collection business, the Nyberg Auto Works, of Anderson, Ind., of which he is proprietor, on Monday last, 22nd inst., was placed in the hands of Senator Frederick Vannuys, as receiver, by Judge Austill, of the Indiana Superior Court. The petition for the receiver was filed by the National Exchange Bank of Anderson.

The following day (Tuesday), other creditors took similar action, but instead of resorting to the state court they applied to the United States District Court, which, in the person of Judge Anderson, named John C. Teegarden as receiver for Nyberg operating as the Nyberg Auto Works. This petition was filed by the B. & B. Mfg. Co., of Cleveland, Apple Electric Co., of Dayton, and Gibson Automobile Co., of Anderson.

Sympathy in Anderson is generally in favor of Nyberg and strongly against the attorneys whose tactics contributed to his trouble. In an effort to obtain clients, they are said to have written letters which so affected the credit of Nyberg that he has been forced to pay cash for material and thereby greatly embarrassed. He, however, hopes to continue the business, as the physical value of the plant is between $150,000 and $200,000, and the liabilities approximate $90,000 to $100,000. Carl Lemcke, Nyberg's manager, states that the plant has always been operated at a profit, despite the heavy losses sustained in the floods last March, when the Nyberg factory was inundated.

Nyberg, who then was in the automobile business in Chicago, acquired the property about two years ago, and later established a branch plant in Chattanooga, which recently has been undergoing reorganization of some sort.

Goodyear Repudiates Rumors of Merger.

Reports that the United States Rubber Co., owner of the United States Tire Co., had acquired or is negotiating for the control of the Goodyear Tire & Rubber Co., of Akron, are emphatically denied by President Seiberling, of the latter company. Similar rumors were in circulation once before, but the present crop is attributed to the utterances of an Eastern tire man of some prominence.

Tariff Likely to Affect Tire Prices.

It is expected that the Underwood tariff bill will be enacted early next week and be promptly signed by President Wilson. It is known that the reduced duties which it provides will result in the introduction of a $1,500 French car, but the most immediate effect probably will be a readjustment of prices on tires, the duty on which will be cut from 35 to 10 per cent.

Ford Reaching into South America.

Having decided to reach out for South American trade, as it reaches out for trade in other parts of the world, the Ford Motor Co. is making ready to establish a branch and service station in Buenos Aires. It will be in charge of E. H. Hampton, who has been the Ford export manager.

Maxwell Forms a Canadian Company.

The Maxwell Motor Car Co. of Canada, Ltd., with its principal office at Windsor, Ont., has been incorporated under the laws of the Dominion with an authorized capital of $10,000. W. E. Flanders, Walter M. Anthony and Ernest Edward von Rosen figure as the corporators.

Warren Creditors Receive 10 per Cent.

The receiver of the Warren Motor Car Co., of Detroit, has declared a dividend of 10 per cent. The amount, aggregating $50,000, is now being disbursed.

HOUK ACQUIRES CONTROL OF McCUE AND CHANGES NAME

Rival Wire Wheel Makers Unexpectedly Get Together—Houk's Patent Rights Prove of Potent Influence in Transaction.

What is unquestionably one of the most far-reaching deals that has taken place in the automobile trade during recent years was consummated on Tuesday last, when a controlling interest in the McCue Co. of Buffalo was sold to George W. Houk, of Philadelphia. Immediately upon acquiring control Houk instituted a reorganization and the new company thus reorganized and refinanced became the Houk Wire Wheel Co.

The reorganization means chiefly two things: First, that the Houk Wire Wheel Co. will continue to produce the Houk wheel (the successor to the original McCue wheel) under the patents originally granted to the Rudge-Whitworth Company of England, the rights to operate under which in America are held by Houk; second, that additional capital has been put into the old company to enable it to still further increase its facilities, to take care of the extremely rapidly growing demand for wire wheels.

The reorganization, however, in no way affects either the personnel of the directors and stockholders of the only recently reorganized McCue Co., nor the active management thereof. It simply places Houk in and carries with it all the rights and patents controlled by him in this country, without which rights it was conceded by the old organization it would be impossible to produce wire wheels of practical commercial value.

The underlying cause of the deal just completed is Houk's control of basic patents, and particularly those covering the principle of triple spoke lacing and the use of an absolutely automatic locking de-

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vice for detachable wheels. When the present managers of the McCue Co. assumed charge last April they were very quickly impressed by the fact that no matter how perfect a locking device might be, if it were other than positively automatic it was not fool-proof, and was therefore impractical and uncommercial. No matter how simple the adjusting device might be, it is almost inevitable that the majority of persons both in the trade and out of it would fail to adjust such devices, as it was intended to be adjusted. Together with his engineers, W. F. Evans, general manager of the McCue Co., set about the task of overcoming this feature, and as a result the present efficient automatic locking device was worked out. But when finally it was completed it was discovered that the device infringed the patents under which Houk was protected in this country.

The sweeping decision recently handed down in the British courts sustaining the Rudge-Whitworth patents, together with the exhaustive research made by the McCue management, made it very evident that license under the Rudge-Whitworth patents was necessary if McCue intended to continue to manufacture a wire wheel that could be commercially guaranteed.

At the same time, Houk was facing a situation in the production of Rudge-Whitworth wire wheels that made it advisable for him to obtain an additional source of supply equal to several times his present capacity, the insistent demand for wire wheels making it utterly impossible for him to supply that demand for Rudge-Whitworth wire wheels with the facilities at his command.

Negotiations therefore were commenced and have been in progress for several months, for a license arrangement. Meanwhile the McCue Co. holdings were being augmented largely and the capacity increased, and as the result of a thorough investigation of the merits of the McCue holdings, coupled with a careful testing out of their late product, which is hereafter to be known as the Houk wheel, the two interests reached the agreement just consummated in the organization of the Houk Wire Wheel Co., which is entirely separate and apart in every detail both as to holdings and manufacturing from Houk's Rudge-Whitworth enterprise in Philadelphia.

The volume of wire wheel business recently placed by a number of leading automobile manufacturers is remarkable, considering the comparatively recent acceptance of the wire wheel by the buying public in this country, and a large part of this business being tentative upon the clearing of the situation both as regards volume and infringement, the plans consummated yesterday will clear the situation."

HENDERSON GETS INTO HOT WATER BUT QUICKLY ESCAPES

Insistent Creditor Applies for Receiver But Is Promptly Satisfied—Action Serves to Settle Internal Differences.

Internal differences led the Henderson Motor Car Co., of Indianapolis, into hot water late last week, but quick action pulled it out before any considerable damage had been done.

The hot water consisted of an application for a receiver, filed by A. M. Hall, of Indianapolis, whose claim amounted to $1,500. Payment of the amount, it is explained, had been delayed largely because two factions within the Henderson company were fighting for its control. Hall, however, was not interested in the squabble. He wanted his money and immediately he took legal action he got it, and as promptly withdrew the suit.

The proceedings, however, had the effect of bringing the Henderson factions to a realization of the danger which confronted them and, accordingly, they quickly settled their differences by admitting to the board of directors Franklin Bonegut, Arthur R. Baxter and A. R. Smith, all prominent Indianapolis men, who represent new interests controlling approximately $200,000 of the company's added capital.

It is also authoritatively announced that, now that peace reigns, a popular priced Henderson car, using a kerosene carburetter, probably will be added to the line.

Atlanta Dealer is Awarded Verdict.

A verdict of $1,569.50 was returned last week in favor of the Roden Automobile Co., of Atlanta, Ga., in an action brought against the Overland Southern Co. for alleged breach of contract; the Roden company claimed it contracted October 21, 1909, with the Overland Southern Co. to sell Overlands in certain Alabama counties, that it deposited $2,500 as required, that the company refused to return $1,300 of this amount and also refused to pay a freight claim of $134.44. The verdict included interest.

Son Succeeds Father in Smith Company.

To fill the vacancy caused by the death of A. O. Smith, the directors of the A. O. Smith Co., of Milwaukee, at their annual meeting on Friday last, elected his son, L. R. Smith, president and general manager of the corporation. The other officers chosen are as follows: C. S. Smith, vice-president; E. M. Smith, secretary; James L. Sinyard, assistant secretary and sales manager; Joseph J. Stamm, assistant treasurer. The board of directors is made up of the three Smiths, Sinyard and John P. Kelley. The new president has been associated with the Smith company since its organization and has let it be known that he will continue the policies of his father which led to the present growth and prestige of the business.

Two Stearns Branches Incorporated.

To facilitate matters, the F. B. Stearns Co., of Cleveland, has transformed its branches in Philadelphia and Los Angeles into corporations. The former will be known as the F. B. Stearns Co. of Philadelphia, and the latter as the F. B. Stearns Co. of California. Previously the California branch was located at San Francisco, but it has now been transferred to Los Angeles, where J. H. McDuffee will continue in charge. S. N. Bourne will also remain manager of the Philadelphia establishment.

Cole Registers "The Standardized Car."

Due to opportunity afforded by an Indiana State law, the Cole Motor Car Co., of Indianapolis, has registered the term, "The Standardized Car," which it believes will be sufficient practically to assure the right thereto in all parts of the country. As the Federal regulations will not permit the copyrighting of such descriptive terms, until the Cole people found the necessary State law it was not thought that anyone could lay claim to even limited legal right to descriptives of the sort.

Factory for Cameron Wire Wheel.

The Cameron Wire Wheel Co., recently formed in Detroit, has taken possession of a plant at 47 Adelaide street and has commenced the production of wire wheels in earnest. Its officers are F. F. Cameron, president; W. E. Carpenter, vice-president; M. O. Crawford, secretary and treasurer; A. A. Leslie, general manager.

British Patents Issued on Sparton Horn.

Broad patents covering the Sparton electric horn have just been issued in England to the Sparks-Withington Co., of Jackson, Mich. Patents are also pending in all of the other principal European countries in which it is the intention of the Sparton manufacturers to push their horn.

Goodrich President Back from Europe.

B. G. Work, president of the B. F. Goodrich Co., was among those who returned from abroad last week on the Imperator. While abroad he visited the Goodrich factory in Paris, the output of which, he states, while comparatively small, has been sufficient to earn a "decent profit."

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HITCH DEVELOPS IN SALE OF FLECHTER CARBURETTER

Anderson, Inventor, Fails to Assign Patent to Trenton Company Which Bought Flechter Business—Court Order is Sought.

William K. Anderson is a subject of the King of Denmark. He also is the ex-inventor for L. V. Flechter & Co., carburetter makers, and just now he is a thorn in the flesh of the Flechter company and the Trenton (N. J.) Brass & Machine Co., to whom Flechter sold out last spring; as a part of the transaction, he asked Anderson to assign his rights in the Flechter patent to the Trenton company. Flechter sent him an assignment blank and since April 7, the day of the sale of the Flechter company, the Trenton Brass concern has been regularly mailing assignment blanks to Anderson. What he has done with them, unless he is keeping them as souvenirs, does not appear, but according to a suit filed this week in the United States District Court for the Southern District of New York, he has failed to fill out and return any of them. Until he does so, the title to the patent naturally seems clouded and the suit is evidently designed to lift the cloud.

According to the complaint in the action instituted against Anderson by the Trenton company, the former made a contract with the Flechter company August 5, 1910, whereby he assigned to the company all his past and future rights in any patents he had gotten out or might get out for the Flechter locomotive type of carburetter. The consideration was ten shares of stock of the par value of $100 each which he was permitted to buy for $250.

Anderson made certain inventions and improvements, at the Flechter expense, it is stated, all of which resulted in the issuance of patent No. 1,041,708 October 15, 1912. The patent was in Anderson's name, of course, and it was supposed he would turn all of his rights over to the company which employed him. While the Flechter company operated by itself things apparently worked smoothly, but when the Trenton company bought it and prepared to enlarge the production of the carburetter the hitch came. According to the terms of the sale, the Trenton Brass company took over the entire Flechter business and Flechter himself went with the company to assist in the sales work.

Demands for an assignment to the Trenton company were made, but not complied with. The Trenton company asks that Anderson be enjoined from assigning or in any way encumbering the patent during the pendency of the suit and asks that another order be issued compelling him to assign, and that in case he refuses a trustee be appointed to do the assigning for him.

Sues Manufacturer for Broken Sector.

Claiming that a defective steering sector in a Lozier car broke, caused the car to overturn July 2 last and broke two of the ribs of Mrs. Viola Roth, wife of Charles Roth, of New York City, the latter have filed suits in the Supreme Court for New York county against the Lozier Motor Co., of Detroit. She asks $50,000 for her injuries and her husband demands $10,000 for the loss of his wife's services and for medical expenses. They allege that the car had been inspected and pronounced in good order by the Lozier dealer in New York shortly before the time of the accident, and that it was being operated by a skilled chauffeur when the sector broke.

Newtone Makers Produce Mechanical Horn.

While it will continue its motor-driven Newtone horn, the Automobile Supply Mfg. Co., of Brooklyn, has departed radically from its previous practice by placing on the market a mechanical horn, styled the "Motophone," which is heralded as "superior to any motor driven horn or any other device of the class." The "Motophone," which lists at $12, is, of course, operated by merely touching a lever.

Figures Showing Firestone's Big Business.

According to its annual report for the fiscal year which ended July 31st last, the gross earnings of the Firestone Tire & Rubber Co., of Akron, amounted to $15,000,000, in round figures, as compared with $11,500,000 for the preceding year. The net profits were $1,600,000 and the surplus for the year $1,250,000. The balance sheet shows current assets of approximately $7,000,000.

Page to go Largely into Windshields.

E. K. Conover, of New York, who has invented a number of automobile accessories, has joined the Page Fence Co., of Adrian, Mich., and will develop the windshield department of that concern. One of his shields has been made in a small way for a few years by the Fence company, but it is the immediate intention to greatly enlarge the department.

Edmond Acquires Feps Representation.

Having discontinued its New York branch, the Schoen-Jackson Co., of Media, Pa., maker of Feps carburetters, has appointed the E. J. Edmond Co., 1783 Broadway, its general sales agent for the metropolitan territory. The latter will carry a full stock of Feps carburetters and have facilities for installation and adjustment.

UNCOVER "VELVET" PAYROLL FOR MICHIGAN'S OFFICIALS

More Amazing Discoveries in Bankrupt's Affairs—Four Men Draw Big Sums "on the Side"—Assets Shrink.

Judicial investigation of the affairs of the Michigan Buggy Co., of Kalamazoo, Mich., which owned and operated the Michigan Motor Car Co., has disclosed even more remarkable financing than was indicated in Motor World's exclusive story of August 14th. At that time, it was shown how the company kept itself afloat not only by taking and immediately discounting its dealers' notes for the entire amounts of their orders—in at least one instance, in excess of $375,000—but by presenting statements to banks that showed no "Bills Payable," the latter not appearing on the company's books but being carried in file indexes.

At the time of the failure, August 6th, ugly rumors were afloat in Kalamazoo and unpleasant charges were leveled at Victor L. Palmer, secretary-treasurer and general manager of the Michigan company, the belief at that time being that the owners of the property, Frank B. Lay and his two sons, George and Frank B., Jr., had been more sinned against than sinning. Formal investigation which, at the instance of the receiver, the Detroit Trust Co., has been conducted during the past week by John Banyon, the referee in bankruptcy, has, however, served to indicate that the Messrs. Lay did not lack culpability.

The most sensational development brought out by the referee concerns the existence of what is termed a "velvet" payroll, maintained, apparently, for the benefit of Palmer and the Lays. According to the testimony, it was carried on the company's books in the name of J. Roach & Co., which is said to be a purely mythical firm, to whom the checks were drawn in a lump sum and the money later divided among the responsible parties. Of the "velvet," Frank B. Lay, president, drew $35,000 a year, while his two sons and Palmer received $25,000 each. Palmer's regular salary was $300 per month.

The receiver's report, which just has been issued to the creditors, shows that the Michigan Buggy Co.'s total assets, valued at $2,782,033.44, have been appraised at only $1,261,387.92. The liabilities total $2,528,723.07, but there are additional contingent liabilities of $422,287.45, made up of endorsements of discounted notes, $321,191.98 and drafts discounted with bills of lading for cars attached, $101,095.47.

In its letter presenting these figures to

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the creditors, the receiver hints at the remarkable condition of affairs in the following language:

"It is perhaps proper to call attention in this connection to the fact that in view of the company's rather peculiar and incomplete method of accounting, the absence of complete cost or inventory data, and the volume and varied nature of its financial transactions, the compiling of such a statement of the assets and liabilities has been rather an unusual and difficult task. Verification of accounts has been requested from all creditors' and debtors' records, but we have been only partially successful in securing answers which we may use as a basis for reconciling accounts, so it may be considered unlikely that all claims that will eventually be proven have so far come to our notice.

"In preparing the statement of assets and liabilities there has arisen a difficult question in reference to the so-called dealers' deposit notes given by certain of the company's automobile dealers in accordance with the terms of their contract, a large number of which notes have been discounted and are at present held by the banks, also the value of the cars on hand at the time of our appointment or which had not been settled for which had been shipped under the terms of the contract with the dealer.

"There has been no judicial decision as to the liability of the company or the dealers on these deposit notes or the present ownership of the cars, but in view of the opinion of our counsel, we have, in compiling the statement, worked under the assumption that the value of these cars should be shown as an asset, as they will be applied later in the discharge of either general or specific indebtedness of the company. We have also assumed that many of the notes under discount would prove to be, in any event, a direct obligation of the company, provable as claims by their holders, and they have accordingly been listed, and the residue of the company's notes receivable under discount shown as a contingent liability."

Cyclecar Project for Minneapolis, Too.

The Continental Engine Mfg. Co., which has done business in Chicago and Dallas City, Ill., is removing to Minneapolis, where it will produce a cyclecar listing at $385. It has acquired a plant on 14th avenue S. E. and the Northern Pacific Railroad. The prime movers in the affair are J. E. Pfeffer and T. H. Mars, of Chicago, and L. C. Erbs, of Minneapolis. In addition to the cyclecar, it is probable that the company will also produce a few full grown automobiles which will be known under the name Bull Moose.

BENNETT IS LAID AT REST; WILLYS'S GRACEFUL TRIBUTE

Funeral of Overland's Departed Manager Devoid of Display, as he Requested—Physicians Explain Cause of Death.

In accordance with his last wishes, the funeral of George W. Bennett, vice-president and general manager of the Willys-Overland Co., which occurred in Toledo Saturday afternoon last, was of a strictly private character, attended only by his most personal friends and business intimates. It was his expressed desire that there be neither crepe nor flowers. His body was temporarily placed in the Toledo Mausoleum, or receiving vault.

Among those in attendance were Charles T. Jeffery and W. J. Cavanaugh, representing the Thomas B. Jeffery Co., of Kenosha, Wis., Bennett having spent some 20 years in the service of the late head of that company.

His successor in the Willys-Overland organization has not yet been chosen. For the time being, the duties will be shared by C. S. Jameson, his former chief assistant, and Treasurer Stewart.

As stated in last week's Motor World, the death of no man identified with the industry ever caused a more widespread shock. Bennett was of such powerful build, and so like the picture of health, that none was prepared for news of his death. Circulation of reports that he had succumbed to the effects of a second operation led the doctors in attendance to issue a formal explanation. They state that the first symptoms of appendicitis, recurring attacks of which Bennett had suffered for years, appeared the Thursday previous to his death. He was operated on once only, and in Toledo within 20 hours thereof, at which time it was found that his appendix was in a leaking condition, causing a virulent infection leading to acute peritonitis, which caused his death Wednesday afternoon, 17th inst.

Apart from his handsome earnings during the last three years, Bennett left a comfortable fortune in life insurance, most of which has been recently taken out.

In paying a tribute to his late lieutenant, John N. Willys describes Bennett as a "man who, like but few others, understood the power of organization—a practical apostle of genuine team work in the world of commerce." "The finest monument that can be erected to his memory," adds Willys, "is that which he himself built during his lifetime—a distributing organization, unequalled in the world, which typified his far-reaching conception of the superiority of perfect business organization."

Burglars Visit St. Louis Supply Store.

Yeggmen paid a visit last week to the automobile supply store of Bart S. Adams, at 3408 Lindell boulevard, St. Louis, Mo. They bored 35 augur holes in the floor to remove a section of it and gained entrance to the store, taking $5.40 from the cash drawer. Inasmuch as soap for making a "soup" cup was found, it is believed the intruders contemplated "blowing" the safe but were frightened away before doing so.

Demands $2,700 for Ford Car Parts.

A bill of $2,716.91 for Ford parts is the basis of a suit filed this week in the Supreme Court for New York county against the Simmons Automobile Co., of 2138 Westchester avenue, by Phillip Goettel; Goettel trades as the Bronx Ford Co., at 415 East 149th street, and claims that the parts were supplied between April 1 and August 1, 1913.

Nova Scotia Decides to Expand.

The Nova Scotia Carriage & Motor Car Co., Ltd., of Amherst, N. S., has finally decided to complete its new plant, the erection of which was commenced in that city. When it is finished the property in Kentville, where operations were inaugurated, will be removed to the Amherst factory.

Lumsden Here for Short Visit.

Arthur E. Lumsden, manager of the B. F. Goodrich Co.'s factory in France, is in this country for a brief visit. Lumsden, a former Chicagoan, was for many years in charge of the Goodrich London depot before being promoted to the management of the French factory.

Mack Branch Opened in Springfield.

The Mack Motor Truck Co., a Massachusetts corporation which distributes the International Motor Co.'s trucks in New England, has opened a branch at 88 Birnie avenue, in Springfield. It is in charge of E. N. Wright.

Stocker Acquires Plant for Galen's Pump.

The Stocker Mfg. Co., recently organized in Detroit, has leased manufacturing facilities at 61 Fort street east. It will manufacture a double-action automobile pump patented by Robert Galen, secretary of the company.

Gibney to Open Branch in Boston.

The Gibney Tire & Rubber Co., of New York and Philadelphia, is preparing to establish a branch in Boston; it will be located on Brookline street, near Beacon street.

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The Week's Incorporations

Coloma, Mich.—Coloma Auto Sales Co., under Michigan laws; authorized capital, $5,000.

Stoneville, N. C.—Carolina Motor Co., under North Carolina laws; authorized capital, $5,000. Corporators—J. M. Deaton and others.

Morristown, N. J.—Motor Transportation Co., under New Jersey laws; authorized capital, $20,000; to operate a motor transit line.

Pontiac, Mich.—Pontiac Motor Car Co., under Michigan laws; authorized capital, $25,000. Corporators—I. A. Morrison, C. F. Taylor, E. Hoobler.

San Antonio, Tex.—Texas Motor Truck Co., under Texas laws; authorized capital, $10,000. Corporators—William H. Smith, Marvin Trice, S. Burg.

Davenport, Ia.—Zip Cyclecar Co., under Iowa laws; authorized capital, $25,000. Corporators—G. Decker French, Frank W. Skinner, R. W. Phelps.

Detroit, Mich.—Dodge Motor Co., under Michigan laws; authorized capital, $15,000. Corporators—Alvah M. Dodge, J. Major Lemon, Jonas H. Kirby.

Detroit, Mich.—Flyer Motor Car Co., under Michigan laws; authorized capital, $100,000. Corporators—G. A. Milne, Alwin A. Gloetzner, Henry W. Campbell.

Pittsburgh, Pa.—Motor Square Garden Amusement Co., under Delaware laws; authorized capital, $15,000; to manufacture and deal in motor cars and accessories.

Chicago, Ill.—Paul Wargny & Co., under Illinois laws; authorized capital, $2,500; to deal in motor cars. Corporators—Gustav Mueller, Paul Wargny, Sidney B. Meyer.

Chicago, Ill.—Ross Sleeve Motor Co., under Illinois laws; authorized capital, $20,000; to deal in motors and engines. Corporators—F. W. Lull, E. Lundblad, A. S. Lytton.

Providence, R. I.—Goodwin-Sherman Motor Co., under Rhode Island laws; authorized capital, $25,000. Corporators—Charles Goodwin, Charles A. Sherman, William Ford.

Salem, Mass.—Loring Avenue Garage, under Massachusetts laws; authorized capital, $5,000; to operate a garage. Corporators—George H. Brooks, George P. Brooks, Ashley R. Slee.

Texarkana, Tex.—Motor Mart, under Texas laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—J. E. McCullough, R. P. Wilson, J. C. Watts.

Detroit, Mich.—Jeffery-Dewitt Co., under Maine laws; authorized capital, $500,000; to manufacture, sell and deal in automobile parts and accessories. Corporators—E. M. Leavitt and others.

Chicago, Ill.—Trumbly Co., under Illinois laws; authorized capital, $10,000; to deal in motor cars and conduct a repair shop. Corporators—M. J. Woodhull, J. G. Trumbly, R. B. Lacey.

Bridgeport, Conn.—Moon Motor Sales Co., under Connecticut laws; authorized capital, $15,000; to deal in motor cars. Corporators—Barnith Sachs, Henry H. Drucker, Samuel B. Drucker.

Indianapolis, Ind.—C. A. Chambers Co., under Indiana laws; authorized capital, $5,000; to deal in motor cars, trucks, plows, etc. Corporators—C. A. Chambers, L. M. Chambers, A. L. Caterlin.

Port Jefferson, N. Y.—Metco Motor Car Co., under New York laws; authorized capital, $5,000. Corporators—E. Hollis, L. A. Sorenson and E. C. Hebereft, all of 140 Nassau street, New York.

Cleveland, Ohio—Metropolitan Garage Co., under Ohio laws; authorized capital, $5,000; to operate a garage. Corporators—C. Mulcahy, N. C. Quigley, Harry Loeb, W. I. Quigley, Marie Schwab.

Hempstead, N. Y.—G. B. Garage & Mfg. Co., under New York laws; authorized capital, $50,000. Corporators—Samuel G. Sammis, Lewis B. Haff and Reginald L. Vandewater, all of Hempstead.

Chicago, Ill.—L. Markle Co., under Illinois laws; authorized capital, $40,000; to deal in motor vehicles, parts and accessories. Corporators—Emil C. Wetten, Jasper E. Rommell, Harvey M. Doyle.

Indianapolis, Ind.—Redkey Garage, under Indiana laws; authorized capital, $10,000; to buy, sell and deal in motor cars and operate a garage. Corporators—David Cook, Harry Aukerman, Austin H. Williamson.

Wilmington, Del.—United States Pneumatic Rim & Tire Co., under Delaware laws; authorized capital, $1,000,000; to purchase from the Pneumatic Rim & Tire Co. all patents, especially the "Chippey Patent."

Chicago, Ill.—Automobile Realization Co., under Illinois laws; authorized capital, $90,000; to deal in motor cars, parts and accessories. Corporators—Frank T. Righeimer, Mark W. Bigelow, Frank T. Murray.

Hempstead, N. Y.—London Limousine Co., under New York laws; authorized capital, $10,000; to manufacture automobile bodies. Corporators—John A. McAvoy, Charles U. Stowe, and Anna M. Stowe, all of Hempstead.

New Rochelle, N. Y.—Huguenot Motor Corporation, under New York laws; authorized capital, $3,000; to manufacture motors, etc. Corporators—Sidney H. Kent, Albert D. Stubblebine and F. A. Stubblebine, all of New Rochelle.

Herkimer, N. Y.—Garage Co. of Herkimer, under New York laws; authorized capital, $5,000. Corporators—Charles O. Terwilliger and Josephine B. Terwilliger, both of Prospect street; Newton Foss Hand, 102 West street, Utica.

Auburn, N. Y.—Ten Eyck Pump Co., under New York laws; authorized capital, $5,000; to manufacture air pumps, automobile starters, etc. Corporators—Frank E. Ten Eyck, John C. Glaum, Jr., Maud E. Ten Eyck, all of Auburn.

New York, N. Y.—Harroun Carburetter Co., under New York laws; authorized capital, $25,000; to manufacture automobile parts. Corporators—Victor Kliesrath, Walter F. Blaisdell and R. Burchard Hultz, all of Port Washington.

Duluth, Minn.—Resilient Auto Wheels Co., under Minnesota laws; authorized capital, $50,000; to manufacture resilient automatic wheels. Corporators—Arthur Jutila, Helmer Johnson, Osmund Thompson, A. W. Youngkvist, B. E. Wellberg.

New York, N. Y.—Bellamore Toomey Co., under New York laws; authorized capital, $30,000; to deal in motor cars, etc. Corporators—Thomas H. Toomey, 3920 Broadway; David G. Bellamore and David H. Bellamore, both of 29 Clairmont avenue.

Brooklyn, N. Y.—Ritz Cycle Car Co., under New York laws; authorized capital, $10,000; to manufacture motor cars, cyclecars, motorcycles, etc. Corporators—Albert T. Maurice, A. Spotswood Campbell and Daniel R. Murray, all of 54 Wall street.

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EXPORT OF CARS INCREASED $33,616 IN MONTH OF JULY

Eleven Geographic Divisions Record Gains—Pleasure Cars Advance 10 Per Cent. in Number—Tires and Engines Lose.

Of the twelve geographic divisions into which foreign countries are divided for export purposes eleven during the month of July gained over the same month of the preceding year, and the total volume of cars, parts, engines and tires reached the sum of $2,543,919; cars alone for the compared months of July gained $33,616 in that month of the present year, which is an advance of 2 per cent. The gain in number of cars was 129, or 8 per cent.

Since pleasure and commercial cars were not separately listed prior to July 1, 1912, it is possible now for the first time to compare the separate exports of these two types of vehicles. Pleasure vehicles gained 163 in number, or 10 per cent., and $86,462 in value, or 5 per cent., and the average value in July of this year was $949. In July, 1912, the average value was $993, which gives to the later July a loss of $44, or 4 per cent. Trucks, taken by themselves, are entered in the loss column, the figures decreasing by 34, or 43 per cent., in number and $52,846, or 33 per cent., in value. Also the average values were: July, 1912, $2,005; July, 1913, $2,127; a gain of $122, or 6 per cent. Parts increased in value by $554, less than 1 per cent.

As regards the geographic divisions, the most noteworthy achievement was that of Germany, which took 110 more cars than it did in July, 1912, an advance of 500 per cent. In value this nation increased its American purchases by $77,232, or 365 per cent. Next in percentage of increase is Other Countries, which added 112 cars to the number it bought in July of last year, a gain of 260 per cent., and increased the value of its purchases by $91,413, or 116 per cent. Mexico apparently is recovering from some of the losses which accompanied its internal disturbance and advanced its total of cars by 21, or 233 per cent., and by $24,804, or 170 per cent.

The West Indies and Bermuda continued to prove a market for American cars, increasing their takings by 22 cars, or 169 per cent., and by $21,004, or 172 per cent. British Oceania, which for some time has imitated the United Kingdom in decreasing its American purchases, is this time registered in the column of gains, having taken 68 more cars, or 32 per cent., with an increased valuation of $56,700, or 31 per cent. South America's advance was 42 cars, or 23 per cent., and $48,746, or 24 per cent.

The United Kingdom did not entirely succeed, as it has several times, in showing a loss, for while it took 45 cars, or 13 per cent. less, its valuation gained $1,868, a slight percentage. Canada received 255, or 55 per cent., less cars with a decreased valuation of $338,715, or 49 per cent.

Although the number of engines exported was 405, or 80 per cent., less in July, for the first seven months of 1913 this product gained by 1,968, or 34 per cent. The value, too, in July fell off by $32,491, or 49 per cent., but in the seven-month period advanced by $558,820, or 87 per cent. Tires lost by $10,963, or 2 per cent., in July, but in the seven-month period gained by $710,124, or 38 per cent. Cars for the seven months gained 1,695, or 11 per cent., in number and $2,352,561, or 15 per cent., in value and the total for all products recorded an increase of $4,248,529, or 20 per cent., for this first part of the present year. The details are shown by the subjoined table.

	July 1912 Quantities.	July 1912 Values.	July 1913 Quantities.	July 1913 Values.	Seven Months Ending July 1911 Quantities.	1911 Values.	1912 Quantities.	1912 Values.	1913 Quantities.	1913 Values.
France	36	$31,843	47	$33,281	273	$326,800	430	$333,063	567	$429,133
Germany	22	21,188	132	98,420	73	91,283	252	199,726	761	678,462
Italy	36	26,795	39	31,932	137	169,914	176	169,252	222	198,300
United Kingdom	345	230,924	300	232,792	1,875	1,653,995	3,676	2,739,948	2,970	2,250,040
Other Europe	147	124,672	166	148,275	508	492,222	1,023	859,446	1,298	1,128,107
Canada	462	686,889	207	348,174	3,724	3,925,265	5,197	6,253,889	4,733	6,289,041
Mexico	9	14,683	30	39,487	147	258,064	125	183,020	,142	255,287
West Indies and Bermuda	13	12,166	35	33,170	175	210,432	196	208,303	286	286,838
South America	180	198,798	222	247,544	444	604,229	1,071	1,288,543	1,732	1,963,328
British Oceania	209	184,034	277	240,734	938	858,196	2,128	1,948,505	1,873	1,827,690
Asia and Other Oceania	133	124,086	154	144,472	477	428,119	843	878,678	1,445	1,410,087
Other Countries	43	46,559	155	137,972	164	176,045	378	355,799	1,161	1,044,420
Total cars	1,635	$1,702,637	1,764	$1,736,253	8,935	$9,194,564	15,495	$15,418,172	17,190	$17,760,733
Commercial†	78	156,458	44	103,612	8,935	9,194,564	‡78	‡156,458	662	1,150,649
Passenger†	1,557	1,546,179	1,720	1,632,641			‡1,557	‡1,546,179	16,528	16,610,084
Parts*	.....	394,296	.....	394,850	.....	1,901,707	.....	2,893,753	.....	3,530,777
Total cars and parts*	1,635	$2,096,933	1,764	$2,131,103	8,935	$11,096,271	15,495	$18,311,925	17,190	$21,291,510
Engines	505	66,034	100	33,543	‡61	‡7,751	5,703	642,723	7,671	1,201,543
Tires	.....	390,236	.....	379,273	.....	1,464,060	.....	1,835,045	.....	2,545,169
Total value all products	.....	$2,553,203	.....	$2,543,919	.....	$12,568,082	.....	$20,789,693	.....	$25,038,222

* Does not include engines and tires. † Not separately stated prior to July 1, 1912. ‡ Covers only last half of year.

JULY AUTOMOBILE IMPORTS DECLINE IN VALUE BY 47%

Loss Is $73,573 and Represents 27 Cars—France and Italy Lead Losers With 64 and 38 Per Cent.—England Gains.

The foreign purchases of automobiles by America during the month of July just passed decreased in value by $73,573, or 47 per cent., the importation maintaining the downward tendency which has marked it during recent months; but one country made any sort of gain in its shipments to America, and that was the United Kingdom, which sent cars valued at $3,007, or 34 per cent., more than it did in July, 1912. The number of cars, however, was 2 less, a loss of 40 per cent.

The heaviest loser was France, whose sales in this country declined by 20 cars, or 55 per cent., and by $61,348, or 64 per cent. Germany broke even so far as number is concerned, but in valuation its figures shrank by $4,183, or 23 per cent. Italy's shipments were less by 3 cars, or 50 per cent., and by $4,280, or 38 per cent. The total number of cars was less by 27, or 42 per cent. Parts lost by $500, or 3 per cent. For seven months ending July 31 cars lost 147, or 31 per cent., in number and $313,780, or 29 per cent., in value. The average value was $2,207 in 1913 and $2,425 in 1912. The figures follow:

	July 1912 No.	July 1912 Values.	July 1913 No.	July 1913 Values.
France	36	$95,433	16	$34,085
Germany	6	18,063	6	13,880
Italy	6	11,111	3	6,831
United Kingdom	5	8,810	3	11,817
Other countries	11	21,834	9	15,065
Total	64	$155,251	37	$81,678
Parts (except tires)	..	18,010	..	17,510
Total cars and parts	64	$173,261	37	$99,188

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In the RETAIL WORLD

John Flesher, of Morgan Hill, Cal,. is building a garage.

Walter Philips, of Canton, Ill., proposes to erect a new garage.

Parkhurst & Lavender, of Webster City, Ia., plan to build a new garage.

Frank T. Hutchinson, of Superior, Wis., has taken over the Carey Garage.

Henry & Herman is the style of a new garage business in West Brooklyn, Ill.

F. W. Moore, of Floresville, Tex., is building a new garage and salesrooms, 40 x 70 feet.

H. A. De Raismas, of Elizabeth, N. J., will build a new garage at 250 Union street; it will cost $6,700.

The Cadillac Sales Co., of Fort Dodge, Ia., has completed a new garage; it is locatetd on 1st street.

The W. G. Hirsig Co. has opened new salesrooms in Nashville, Tenn. They are located in the Plater building.

M. A. Christenson, of Stanley, Wis., has sold his garage to George Ehlander; the latter will enlarge the building.

John D. Schaal. proprietor of a garage and machine-shop in Chambersburg, Pa., is about to erect a new building.

E. D. Rubel, of Santa Maria, Cal., has taken over the garage and agency of A. L. Smith; he handled the Cadillac.

J. Krick, of Los Angeles, purposes erecting a garage at 279 West 7th street; it will represent an expenditure of $3,500.

Nehemiah Jennings, of Southport, Conn., plans to build a garage, 40 x 60 feet; he is also the proprietor of a meat market.

Noyes A. Alling, of Bridgeport, Conn., has been granted authority to erect a garage; it will stand on Clinton avenue.

The Mar Vista Co., of Pasadena, Cal., will build a garage at 114-20 South Los Robles avenue; the cost will be $7,000.

Belgard & Jackson, of Los Angeles, plan to erect a one-story garage at 1st and Court streets; the estimated cost is $10,000.

The Keeton Motor Car Co., of Chicago, has leased new salesrooms at 2025 South Michigan avenue; the annual rental is $2,600.

The Morningside Dray & Transfer Co., of Sioux City, Ia., has been granted permission to build a new garage; it will cost $3,000.

The La France Garage Co., of Elmira, N. Y., is erecting a new garage; the company is now located at 251 West Water street.

C. A. Jessup, of Kankakee, Ill., has taken over the E. J. Labeau garage and sales agency; it is located at 158-64 East Oak street.

Losher M. Livingsgood, of Reading, Pa., plans to erect a new garage. The site is on 4th street. The building will accommodate 35 cars.

Martin H. Averman and J. Ward Lyon, of Pittsburgh, Pa., have formed the Averman-Lyon Co. They handle Lozier cars at 5010 Penn avenue.

Charles E. Burnham, owner of the Palace Garage in Worcester, Mass., has awarded the contract for a new garage; the cost is estimated at $12,000.

Hubbard & Kirby, of Red Bank, N. J., plan to take possession of new quarters in the Harry C. Fay building; the present location is on Union street.

The Cartercar Wisconsin Co. of Milwaukee, Wis., is about to occupy new quarters at 2713 Grand avenue; the present location is at 222 4th street.

D. C. McKinnin, of Hughson, Cal., has purchased the interest of J. W. Van Selus in the Hughson Garage; the firm will now be Donaldson & McKinnin.

The Kittitas Auto Co., of Ellensburg, Wash., has broken ground for a one-story brick garage, 60 x 120 feet, at 4th and Water streets; it will cost $8,000.

L. R. Ellis and Frank Wassgarber, formerly dealers in Salina, Kan., are about to open salesrooms in Hutchinson, in the same State; they will stock Studebakers.

A. R. Cutts, of Wautoma, Wis., is soon to take possession of a new garage; it will be 47x80 feet, have a concrete floor and the equipment will provide for free air service.

Aaron G. Cohen, of New Britain, Conn., has sold his garage to T. H. Coggswell and A. C. Nordstrom; it is located on Chestnut street. The Ford agency is a part of the business.

Henry Braden, of Anaheim, Cal., who has been connected with P. J. Weisel & Co., has entered the trade for himself; he will open a garage and salesrooms on East Center street.

George D. Castle, formerly of Waterbury, Conn., and Chauncey Haight, formerly of Albany, N. Y., have leased the Miller Bros. Garage in Glens Falls, N. Y. It is located on Maple street.

J. H. Bolton, of Galveston, Tex., plans to erect a new garage to cost $15,000; he is located at 210 Post Office street and will place his new structure on the same street but between 24th and 25th streets.

M. Krotosoyner, of San Francisco, has secured plans for a one-story garage and salesrooms to be erected at Van Ness avenue and Pacific street; the building will represent an expenditure of $16,000.

The Auburn Sales Co., of Oakland, Cal., has taken possession of new salesrooms in the new and growing "automobile row" on Van Ness avenue; the company formerly was located on Golden Gate avenue.

Holmes & Olson, Firestone distributers in Oakland, Cal., have opened a branch store at 2543 Broadway; Frank M. Cary, for several years connected with the Studebaker business in that city, is manager.

The Equity Automobile Warehouse Co., of Minneapolis, Minn., is erecting a new two-story 2,000-car warehouse at Washington and 8th avenues; it will cost $50,000. H. E. Pence is the head of the company.

The Lister, Smith & Walsh Co., of Providence, R. I., has taken possession of new salesrooms at 37 Chestnut street; the company, which formerly was located on Dorrance street, handles Paige & Jackson cars.

L. W. Spencer, who has conducted an accessory business in Council Bluffs, Ia., at Broadway and Glen avenue, has admitted Roy Camblin, formerly of Omaha, Neb., to partnership; the business is to be extended.

The Suburban Garage Co. has been formed in Wauwatosa, Wis., a suburb of Milwaukee, to operate a garage and repair-shop; it is capitalized at $11,000 and is owned by A. D. and P. G. Warren and D. Krienitz.

G. H. Hafemeister, of Watertown, Wis., has disposed of his interests in the G. H. Hafemeister Motor Co. to Fred Klinger and Edward Radloff; they will operate as

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Klinger & Radloff. The business includes the Ford agency.

The Bartlett-Smith Motor Co. has been formed in Syracuse, N. Y., by G. M. Bartlett and H. D. Smith; they have leased a garage at 211 Harrison street, formerly occupied by Bodine & Devoe, and will stock Studebakers.

The Knowles-McCallum Motor Co. has entered the trade in Des Moines, Ia., at 417 West 4th street; the company handles Colby cars. W. A. McCallum is president and treasurer and Roy Knowles vice-president and secretary.

The C. A. Chambers Co. has succeeded the McFarlan Six Sales Co., of Indianapolis, and will continue at the same location, on North Delaware street; Chambers was the principal member of the old company, which handled McFarlan cars, Standard and Federal trucks and the Hackney motor plow.

The Thorpe-Allen Motor Car Co., of Kansas City, Mo., is about to take possession of a new garage and salesrooms at 1506 McGee street; the company has taken on the Studebaker agency and will conduct its retail sales from the new location but will distribute in several surrounding counties from the old location at 1620 Grand avenue.

The Billings Auto & Tire Supply Co. has entered the trade in Milwaukee, Wis., at 181 4th street and will transact a retail and wholesale business in accessories, tires and supplies; Gordon P. Jahn is manager. The business is owned by F. G. Billings and his sons, Frank, Earl and Frederick, formerly engaged in the piano manufacturing and supply business.

William Hickox and Grant G. Smith, retired capitalists, have formed the Cole Motor Car Co. of Boston, which will handle that line of cars in the Boston territory; Conrad Smith, son of Grant G. Smith and a member of the G. E. & H. J. Habich Co., which formerly handled the account, continues with the new company, as do G. E. Habich and Edward Linehan, the latter of whom will remain as service manager. New salesrooms have been secured at 94 Massachusetts avenue, but the service station will be retained at 53 Bickerstaff street.

Recent Losses by Fire.

Cambridge, Mass. — Prospect Auto Co., 295 Prospect street; garage destroyed. Loss not stated.

Chickasha, Okla. — Chickasha Garage; struck by lightning and destroyed. Loss, $40,000.

St. Louis, Mo.—American Gasolene Co., Theresa street and Grand avenue; two oil tanks struck by lightning and 6,000 gallons of oil burned. Loss not stated.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Thomas J. King, Jr., has been appointed advertising manager of the Diamond Chain & Mfg. Co., of Indianapolis. King is a newcomer to the trade, having been previously connected with the Federal reservation service.

Walter A. Almy has been appointed sales manager of the Mercer Automobile Co., of Trenton, N. J. Previously he had the agency for Cadillac cars in White Plains, N. Y., and Trenton, and therefore knows the retail trade.

Louis Logie, former sales manager of the Tudhope Motor Co., of Orilla, Ont., has been appointed Canadian manager of the Lozier Motor Co., of Detroit. Before going to Canada, Logie served six years with the Ford Motor Co. and three years with the E. M. F. organization.

Robert P. Yeats, former export manager of the R. C. H. Corporation, has joined the Briggs-Detroiter Co. in a similar capacity He has been identified with the automobile trade since 1903, with the Olds, Buick and Hupp-Yeats and R. C. H. companies successively.

Frank H. Smith, who some three months since was appointed a special traveling representative of the Lozier Motor Co., has been promoted to the post of central district manager. He will make his headquarters in Chicago with the Bird-Sykes Co., which handles the Lozier car in that city.

H. T. Curtis has been appointed manager of the New England branch of the Invader Oil Co., and Howard M. Plowman, manager of the Invader branch in Philadelphia. Both men were previously identified with the Havoline Oil and Wolverine Lubricants companies and, therefore, "know their books."

Frank L. Klingsmith, previously its cashier, has been elected secretary of the Ford Motor Co., of Detroit. Heretofore the office was combined with the treasurership, filled by James Couzens, who recently was elected vice-president, to succeed John F. Dodge, and who, while relinquishing the secretaryship, still retains the treasury portfolio.

E. H. Horton, former sales manager of the R. C. H. Corporation, of Detroit, has been appointed sales manager of the Marion division of the J. I. Handley Co., of Indianapolis. In addition to his connection with the R. C. H. institution, Horton previously had acquired considerable experience in the sales department of the Chalmers Motor Co. F. G. W. Sudrow, the former Marion sales manager, has been transferred to the post of district manager of the Southern States, in which the Marion car is well intrenched.

Minor Business Troubles.

The Tobin Whichway Signal Co., of New York City, has filed its schedules in bankruptcy; they disclose liabilities are $26,711 and assets $2,433, consisting of stock $1,255, one car $500, trade mark $105, accounts $518, insurance $50, and cash $5.

Fred I. Tone has been appointed receiver for the Electro Light & Starter Co., of Indianapolis, which recently was petitioned into bankruptcy. There is still hope that the company will be relieved of its embarrassment and resume the manufacture of lighting and starting systems.

The Frederick A. Smith Co., Inc., of 230 West 58th street, New York City, a dealer in supplies and used cars, has filed a petition in bankruptcy; it states that its assets are $778, in outstanding accounts, and that its liabilities aggregate $20,236. Among the creditors are: Antonio D. Martina, $1,500; Farmers' Loan & Trust Co., $1,657; Motor Finance Co., $1,571; Yglesia Lobo & Co., $1,200. The company was incorporated in January, 1911, with a capitalization of $25,000. Frederick A. Smith is treasurer.

Charging that the Sandusky Auto Parts & Motor Truck Co., of Sandusky, Ohio, for which some of the stockholders asked a receiver following the collapse of the Michigan Buggy Co., committed acts of bankruptcy in this and other moves, creditors have filed a petition in bankruptcy against it. The receivership was asked because the Michigan company was a heavy debtor of the Sandusky concern and the failure seriously embarrassed the latter. The alleged acts of bankruptcy include the giving of preference to certain creditors May 17 by the issuance of $150,000 of bonds secured by a first mortgage. The petitioners and their claims are: General Electric Co., $430; Cornelius H. Neils, $54.30; Winter & Mathes, $647.63.

Valvoline Sues Mount Kisco Man.

The Valvoline Oil Co. this week filed suit in the Supreme Court for New York county against Frank E. Shearer, of 91 Main street, Mt. Kisco, N. Y. It claims to have sold him goods to the value of $1,569.79 between Jnue 30 and August 15, 1911, on which he was paid but $403.57, leaving a balance of $1,166.22.

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MOTOR WORLD

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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WHEN "TALKING POINTS" FAIL OF EFFECT.

Seeing things as others see them is not always easy, but happy and successful is the salesman who possesses the gift. While it is well to be charged with "talking points," it is better far to know when and how not to make the most of them.

There are prospects who enter a salesroom with practically open minds and with little or no knowledge of what they want; but in most cases some sort of an idea has been formed as to the kind of car, or the features of a car, that will "fill the bill," and in such a case the salesman's talk may have just the opposite from the desired effect because he does not look through his prospect's eyes, so to speak.

"He told me at length what he thought of the car," complained a would-be purchaser of a gasolene car in recently recounting his experience. "But he didn't seem to care a particle about my own ideas as to what sort of a car I wanted. I was looking for a quiet little car that my wife could drive, but though the salesman assured me that any lady could handle his machine easily, he insisted on dwelling on mechanical details which did not interest my wife or me either, for that matter, and in extolling the high-gear hill-climbing qualities and the speed of the machine, which were equally uninteresting to us. No doubt the car would have answered the purpose very well, but my wife became nervous over the constant repetition of difficulties that in this particular machine had been eliminated; the existence of such difficulties impressed her while the claims of elimination did not. We wound up by buying an electric."

Not only is this a case from real life, but it was related by the man who sold the electric and who was wise enough to so completely avoid the mechanical aspect that he created the impression that the mechanism of the car was a vague something that made the car go but, like the "insides" of a telephone, was best left to itself, so far as the lady herself was concerned.

The case is, perhaps, a little extreme, but the moral is plain. A prospect usually has a more or less well developed mental picture of the car he wants, and it is the duty of the salesman to get a glimpse of that picture if he can. He will then be in a position to fit his car into the picture as well as the circumstances will permit.

A MAN NOT AFRAID OF RESPONSIBILITY.

It is not often that the death of a man who is not what may be termed a captain of industry causes a more widespread shock than was caused by the death of George W. Bennett, general manager of the Willys-Overland Co.

At no time the actual head or owner of a business, and never a self-seeker, Bennett was, nevertheless, one of the commanding figures of the industry. That he left a mark is not to be gainsaid.

He resorted to none of those tricks or artifices which so often are cloaked by the term diplomacy; they were foreign to his nature. His was a positive character; there was nothing negative in his make-up. He commanded by sheer force of what he said and what he did. Far-seeing, and possessed of a gift for organization, he knew not only what to do, and how and when to do it, but he did not fear to do it. It was these attributes which made him one of the truly great sales generals.

Summarized, and pointing to the moral contained in his career, he best may be described as a man not afraid of responsibility—a fear which half-makes or unmakes so many men placed in positions of power. Too many men, though they may be able to plan, cannot execute; they are unfitted for responsibility; others do not know how to bear the burden, or they bear it in a halting, timorous, struggling fashion which serves no great ends. They must needs lean on someone or something and find moral, if not mental or physical, support from some source, sometimes consciously, at other times secretly or unconsciously.

Bennett could plan and he could execute, and he was his own support; he gloried in responsibility and made his greatest mark when the greatest burden of it was placed on his shoulders and he was permitted to carry it in largely his own way, and by his own methods. He was a strong man because of his own strength.

There are few industries which would not be the better for the existence of more Bennetts. Though he did not rank as a captain of industry, George Bennett was a first lieutenant in all that the term suggests, and few great men and few great movements attain to great heights without lieutenants of the sort.

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75% PROFIT IN CYCLECAR! NO? READ THE PROSPECTUS

Detroit Companies Present Glowing Display of Drawings and Promises —Use Ford's Success to Spur on Possible Investors.

If anyone desires to invest money in cyclecars, either the Detroit Cycle Car Co., or the Princess Cycle Car Co., both of which have offices in Detroit, will be mightily glad to receive it. Both companies have complete blueprints for cars which it is figured can be produced for less than $400, but just now they are offering shares—not cars—for sale.

According to the Princess company's prospectus, on an output of 3,000 $375 cars, there will be a net profit of $50 on each car, equivalent to a dividend of 75 per cent. on its entire capital. The Detroit Cycle Car Co. does not attempt to definitely forecast profits, but both promoters are making the most of Henry Ford's success and the $10,000,000 "melon" which the Ford company recently divided; in fact, Ford's success is made to appear the principal reason why men with money should put it into cyclecars. The painting of the picture by the Detroit Cycle Car Co. is particularly interesting and discloses the thought that fills the heads of those who believe there are uncounted millions to be grasped. Gaze on it:

"Would you like to own some Ford Motor Co. stock? Of course you would, but it's too late. You are probably one of those who had the chance, just a few years ago, to get in with Ford. You were skeptical and afraid and wanted to see a whole lot for your money. You were from Missouri and wanted to be shown.

"Mr. Ford has shown you, but you don't own any of his stock and you were not one of the men who helped cut that big $10,000,000 melon a short time ago. He does not need your money to-day, so that's an opportunity you have lost.

"Here is one real opportunity in the cyclecar field. Are you asleep or on the job? Are you going to wait to be shown, or will you join now, profit by past experience, and help organize the largest, best company you ever had the opportunity to help promote and build?

"This business promises to become one of the largest industrial motor car companies in America. Just because it's new, don't sit there and say 'bah!' Look around and inquire of the man who is 'up to snuff' in the game, and if he is posted he will tell you it's the 'biggest,' healthiest baby ever born in the automobile industry.

"There are some men who can only look backward, who live only in the past, can think of only what they were, what they might have accomplished, if they only had a chance. To such men we wish to say Good Night, Nurse!

"We want men who can look ahead; who can plan and see the future; men who do things; who have the courage of their convictions; who can invest $100 or more without placing their families in want; men who can afford to take a real chance.

"Henry Ford is a leader. He is the man to-day that is responsible for the big demand in low-priced cars. He has created the desire in the hearts of hundreds of thousands to possess an automobile who cannot afford to pay even his low price and who are now waiting—almost fighting—to buy one at $375.

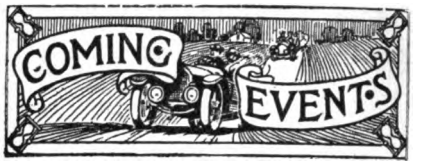
"Mr. Ford has only scratched the field of possible sales. He is unable to keep up with the vast business which he has created and has but irritated this vast market to the extent where ten factories the size of the present Ford plant will not be able to fill the demand for low-priced cars in the next five years to come.

"Now the question is, Are you awake to the fact, or are you dreaming and groping in the dark while this real opportunity is hammering at your door with a sledge hammer? If you are the type of man who is timid and afraid, you will let this opportunity go by; if a man of courage and foresight, you will go forth and help build up and create this great auto industry. Some one is going to make some money. Are you going to be one of them?"

Legal Rebound of Stock's Spring Wheel.

Whether Robert Stock, of Mount Vernon, N. Y., converted to his own use the factory equipment and patents of the Robert Stock Auto Spring Wheel Co., Inc., is the point at issue in an action which the corporation brought this week against Stock in the Supreme Court for New York county. The company says he did; Stock says he didn't, and refuses to pay the $10,000 damages which is the amount the company demands.

Stock, who is an inventor, secured some spring wheel patents several years ago and two years ago formed the company, with the assistance of Joseph Bokelman, of Yonkers, N. Y. A factory was secured at Mount Vernon and equipped, but little manufacturing was done, and it now is charged that between March 17 and July 1 of this year Stock sold, disposed of or converted to his own use the equipment and patents. In the answer which he sets up he admits that the property in question belonged to the corporation in question but denies everything else.



*Indicates Sanction by A. A. A.

Sept. 26, San Marcos, Tex.—Hays County Fair Association's track racemeet.*

Sept. 26-27, Peoria, Ill.—Track racemeet under auspices of J. A. Sloan.*

Sept. 27, Kalamazoo, Mich.—Track racemeet under auspices of E. A. Moross.

Sept. 27-28, Bakersfield, Cal.—Kern County Fair Association's track racemeet.*

Sept. 28, Terre Haute, Ind.—Track racemeet under auspices of E. A. Moross.*

Oct. 3, Trenton, N. J.—Inter-State Fair Association's track racemeet.*

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.*

Oct. 4, Fresno, Cal.—Fresno County Agricultural Society's track racemeet.*

Oct. 4, St. Louis, Mo.—Automobile Club of St. Louis's reliability tour.*

Oct. 11, Springfield, Ill.—State Board of Agriculture's track racemeet.*

Oct. 17-27, Paris, France—Annual automobile salon.

Oct. 18-19, St. Louis, Mo.—Track racemeet under auspices of J. A. Sloan.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

Nov. 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile club.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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PROMISE OF CHEAPER FUEL PROVES TO BE FALSE ALARM

Motor Spirit Rediscovered, but it Remains in "Stink Stage"—Prohibitive Cost of "Sweetening" Precludes Lowered Price.

Press despatches from Ohio dealing with what is described as a "tremendous upheaval in the oil refinery business," due to a "new process of obtaining gasolene, controlled by Standard Oil interests," prove to be largely a false alarm. The reports state that the new process probably will bring about a reduction of four cents in the price of gasolene. Men on the very inside of Standard Oil, however, state that the "new process" is none other than that discovered by Dr. Burton—which, incidentally, it has been found was discovered by a German some 25 years ago—and by which "motor spirit," widely heralded only a few months ago, was produced in limited quantities.

Motor World's informants go further and state that the producers of "motor spirit," which was to sell for about three cents less than gasolene, have had their own troubles in making it a thoroughly commercial fuel for automobile use. While possessing few drawbacks for motor truck or stationary engine use, in pleasure car usage it gave out an odor which, it is stated, made limburger cheese appear cologne by comparison.

In other words, as these Standard Oil experts technically express it, "motor spirit" when first announced had been developed only to what they term the "stink stage." The process of "sweetening" it proved so expensive that it has been found that "motor spirit" cannot be marketed at less than the present price of gasolene. Prophecies of a "tremendous upheaval," therefore, are chiefly wishes that are father to the thought.

Eleven-Year-Old Suit is Discontinued.

When an order was issued this week in the United States District Court for the Southern District of New York in the case of Whitney Motor Wagon Co. vs. White Sewing Machine Co., there was an audible rattle of dry bones and a reviving of memories of the old steam automobile days. The order was one discontinuing the action.

The suit was brought July 15, 1902, 11 years ago, and was for alleged infringement of patent No. 652,941, issued to George E. Whitney, July 3, 1900, and covering the running gear of a steam buggy. The suit made little progress and has been classified as a "dead one" for years. The Whitney company operated, nominally, at least, in Kittery, Me., and the White Sewing Machine Co. was the forerunner of The White Co., which manufactured steam automobiles for many years and which is still producing a few.

Lake Lines Abandon Proposed Rule.

Due to the efforts of the general traffic department of the Automobile Chamber of Commerce, the Association of Lake Lines, which includes the steamship companies operating on the Great Lakes, has been induced to alter its purpose to make more stringent the regulation applying to automobiles. Originally the association considered the establishment of a rule which would put automobiles and other vehicles on a restricted list, giving to local agents authority to refuse or accept such shipments at their option. The A. C. C. traffic department was represented at the meeting at which the subject was introduced and, as a result, the proposed rule will apply only to boats handling freight exclusively. There will be no change in the present shipping regulations on vessels which handle both freight and passenger business; they will continue to accept automobiles unreservedly.

Many Cars Owned in Foreign Lands.

According to figures gathered by the British Board of Trade, there are only 200 automobiles in the Empire of Japan, while there are 400 in the city of Shanghai, China, alone, and 829 in Cairo, Egypt. Additional figures from the same source indicate a total of 4,182 cars in British South Africa, 6,009 in Victoria, Aus., 4,469 in New Zealand, 981 in Tasmania, 900 in Victoria, B. C., 950 in Edmonton, Alberta, 2,000 in Mexico, 644 in Norway, 1,942 in Sweden, and 450 in Siam.

Bigger Dividend from Texaco Oils.

The heavy advance in the price of crude oil and gasolene during the past year has enabled the Texas Co., producers of Texaco oils, to declare a quarterly dividend of 1¾ per cent., thus placing its stock on a 7 per cent. basis. This represents an increase of ¼ of 1 per cent. over the previous quarterly distribution, which two years ago was reduced from 2½ per cent. to 1¼ per cent.

Germany's Exports Show Great Gains.

Germany's exportation of automobiles is still expanding. For the first six months of the year, there were sent abroad 4,417 cars, valued at $10,204,500, as against 3,761, valued at $7,447,500, during the first half of 1912. Russia is not only Germany's largest customer, but shows by far the greatest proportionate increase.

PACKARD BRANCH TAKES UP THE SALE OF ACCESSORIES

Action Marks Radical Departure from Previous Policy—Gives Discount on Tires and Combination Price on Other Supplies.

Although for more than two months the Packard branch in New York has been engaged in the sale of tires and accessories, the fact appears to be little known. If for no other reason than that it marks a radical departure from the Packard policy, it is of more than local or passing moment. Officials of the New York branch, however, are straightforward in explaining the whys and wherefores of the case.

They frankly admit that they discovered that they were turning away thousands of dollars each year which might as well be directed into their coffers, and as a stock of accessories in no way detracts from the splendor of even a palatial Packard branch, they are now making the most of these products.

That their judgment is correct is indicated by the fact that since the accessory department was instituted, less than three months ago, its sales have amounted to $23,000, of which $8,000 is represented by tires.

In the sale of the latter, the Packard people are openly quoting a discount of 7½ per cent., with an additional 5 per cent. for cash, the discounts applying to practically all of the well-known brands, about a dozen being quoted.

Likewise the Packard branch is making a specialty of quoting a combination price when a number of different articles are taken by one purchaser. One such combination offer is made up of the following articles:

	List.
Klaxon horn	$35.00
Warner M or N instrument	125.00
Trunk rack	12.00
Sager Diamond bumper	25.00
Tire cover—Allen (per pair)	9.50
Tire trunk—Ajax	21.00
Baggage trunk (3 suitcase)	75.00
Slip covers (7 passenger)	75.00
Kellogg pump	38.25
Lamp bulbs (with case)	4.75
Tire complete P. T. (36 x 4½)	47.50
Tire complete P. T. (37 x 5)	59.50
	$527.45

The Packard selling price for the combination is $370, a saving of $157.45 to the consumer.

The Harrolds Motor Car Co., the Pierce-Arrow agents in New York City, have also recently undertaken the sale of tires, but only to Pierce-Arrow owners, to all of whom is quoted a flat discount of 12 per cent.

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SALESMAN THE BUYER'S EQUAL

Assertion of Equality Often Helps in Strengthening Arguments — Parvenu Who Bought After Salesman Asserted His Position.

Through the death of a relative she had recently become possessed of sufficient means to buy an electric car; she had always wanted one. She tripped into the office of the electric car salesroom with just as much of an "air" as if she had been feeding off gold-tipped spoons from the very first day till now. The salesman was equal to the occasion, and his "air" was just as "grand" as hers—in fact, he went her several degrees better, with the result that she soon felt very much at home and shortly after her arrival was arranging for a demonstration. Promptly at the hour set the salesman called on her.

Salesman Waited More Than Half Hour.

"If you don't mind," she suggested, "I should like to drive to Burns avenue, where I want to stop for a moment to speak to a very dear friend of mine regarding an apartment which I expect to lease for the winter." Of course, the salesman did not mind a few minutes, more or less. He obligingly drove her to Burns avenue. She stepped out and disappeared. He waited, and waited, and waited. Thirty-seven minutes passed before she returned.

"Oh, I owe you an apology, Mr. Brown, for keeping you waiting so long; I am so sorry!" she said. Instead of replying, "Oh, never mind that—it's only a trifle," or something equally diplomatic Brown blurted out: "You certainly do owe me an apology. You must fancy I'm a chauffeur. You have kept me waiting exactly thirty-seven minutes, and I am surprised that you should be so wasteful of my time. I must get back to the office immediately. If you will let me know where it will be convenient to let you off, I will drop you there and make arrangements for a demonstration at some other time."

The little woman lost all her "air" at once. She was human and contrite. She no longer tried to be superior to the salesman but treated him as an equal, and two days later he made the sale. This was a case where the "dope" was all wrong and an entirely different method won out.

EFFECT OF KEEPING PROMISES REGARDING REPAIR WORK

A promise is an obligation until it is discharged. If you told the man you would have the job ready at six o'clock, see that he gets it at that time. Nothing will make a customer develop a grouch more quickly than having to "wait around and wait around and wait around," as someone aptly expressed it. It takes energy and supervision to be the one place in town where people do not have to wait, but it is worth big money. Try to acquire the reputation.

FACTORS THAT MAKE FOR AUTOMOBILE DEALER'S SUCCESS

When a man has sold automobiles at retail and has then made a success of his job as sales manager for a big manufacturer, what he says regarding the business of selling automobiles is sure to be more or less instructive.

"Lack of merchandising experience and ability is responsible for most of the failures in the automobile business," is the opinion of one such man. "When people stop looking at it as a business that is 'peculiar' and 'different' and begin to realize that, with all its differences, the automobile business is exactly the same as any other business except that one has to work a little harder at it to make any money, there will be just as much or more money in it as there is in most other businesses.

"The grocer must carefully watch his accounts, watch his buying, watch his payroll, his rent, his insurance and all the other items that make his out-go and income. He keeps records and keeps them up-to-date. So does the successful hardware man, and the drygoods merchant and the merchant in other lines. He analyzes and buys his stock to fit his needs and not to oblige the salesman or because somebody else in town has a similar line of goods. If he is successful it will usually be found that he sells what the community needs and keeps his stock turning over frequently. That's exactly what the successful automobile merchant is doing—and must do."

FOLLOW-UP SYSTEM THAT DIFFERS FROM THE USUAL

The Detroit branch of the Anderson Electric Car Co. has some 600 or more Detroit electrics on the streets of that city, and yet in the following up of prospects their method is diametrically opposed to that followed in the sale of the vast majority of gasolene machines. One of the foundation rules of the sales department is: "Do not chase or hound a prospect."

In accordance with this idea 95 per cent. of all calls are made by appointment. If a prospective customer is not sufficiently interested to request the salesman to call when he is endeavoring to make an appointment, they do not bother with him, but let him go his way. On the other hand, if one of their salesmen does get in he tells the story in such a way that the prospective buyer knows someone has been there from the Detroit electric. If, at the close of the interview, the prospect should say, "I will not be ready to talk business for six months," it is six months before another Detroit electric salesman calls on him. The result of this policy is that people do not fear the electric car salesman and they obtain audiences with a class of people who could not be persuaded to talk to salesmen of the ordinary type.

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AWAKENDISING WORLD

MAKING PROSPECT "LOOK UP"

Wisdom of Leading Buyer of Car Toward Higher Instead of Lower Price—Salesman Who Got "Buck Fever" and Lost a Sale.

A big, handsome man walked into the salesroom of one of the largest electric car dealers in his vicinity. The new salesman arose rather timidly and went forward to meet him. "I am going to buy an electric car for $2,000," rather gruffly announced the visitor.

The salesman had "buck fever." He raced his legs off digging up used cars that were bargains at the big man's figure. He showed no less than eight cars and then went to the upper floors to see if there were not some more. But the big man was not suited. He said very little but he spoke emphatically when he did speak.

"You give me no choice; the cars you show me are practically all the same. Nothing you have appeals to me," he said.

Tried to Meet Price Buyer Fixed.

The salesman tried to locate the manager, but unavailingly. The near-customer departed. The salesman nearly had a fit. He had worked as hard as he knew how; he had shaded prices to meet the $2,000 limit. Still the customer had gone. Why hadn't he made the sale? It never dawned on the salesman that possibly he might have sold the man a new car at a higher price.

Months afterward, when through the ordinary course of human events he had become well acquainted with the big man, who proved to be the president of a large company, he found out why he had not made the sale.

"You went sound asleep that time I was trying to buy a car from you. You could have sold me a new car just as well as not," said the president. "Well, why didn't you tell me? You said you wanted a car for $2,000." "Why should I tell you?" was the reply. "It was up to you, and you had me all the time fussing around looking down when you should have had me looking up."

The salesman thought it over and he has never since made the same mistake.

PLANNING TOMORROW'S WORK AND NOT PLANNING TOO MUCH

Do you plan for the morrow or do you live from hand-to-mouth? The housekeeper who goes to bed without knowing exactly what is on hand for tomorrow's meals causes someone to go hungry and will soon be out of a job. Tomorrow's work must be planned today; no man ever grew big without looking ahead. Right here a wise business man says, 'Dont' plan too much work for the morrow; plan what you know you can do—and do it."

People will always wait if you let them wait. Is there any real reason why that prospect should not buy today? Study the case. What will precipitate action? If you think it over hard enough you will be sure to get the answer.

"Nine men out of ten," says Prof. Williams, "lay out their plans on too vast a scale; and they who are competent to do almost anything do nothing, because they never make up their minds distinctly as to what they want or what they intend to be."

THREE YEARS OF PERSISTENCE THAT BROUGHT ITS REWARD

"The older I grow in this business the more I recognize the fact that stick-to-itiveness is a quality that every salesman can cultivate to his profit," said a tire and rubber salesman. "During the winter months I travel down South, where there is one firm in Atlanta whose purchasing agent would always send back my card with the statement that they were all contracted for on my line and there was no use wasting my time or his. Next time I visited Atlanta my card went up to him just the same. They were large buyers, and I knew if I could ever get their business it would be a great feather in my cap.

"It took three years of calling before I ever saw that purchasing agent. One day I sent in my card as usual and he asked me to come right in. Something had happened so that they were in the market. I hung around Atlanta for three days but could not get them to sign up. Finally I left for the next city on my route, and just got there when a telegram arrived asking me to be in Atlanta in the morning. I got there on schedule time and booked an order for $17,000. Some order! But those Southern fellows buy right and their trade is worth having. I could tell you of a hundred cases where persistency has been just as effective."

WHEREIN LISTS OF PROSPECTS AND LISTS OF NAMES DIFFER

"Too many names on their prospect list—that is the fault of nine out of ten automobile salesmen," said a live wire who has been and is successfully selling both gasolene and electric cars. "I would rather have 10 live prospects than 275 names such as most of the men in our institution carry around with them. There is an awful difference between names and prospects; but some salesmen never see it. Until I have seen and talked with a man and learned that he is actually going to buy some kind of a car I do not regard him as a prospect. Until that time he is simply a name. But, after I have interviewed him and learned the facts I put him on the prospect list if he belongs there and get down to business.

"Hugh Chalmers's idea of the 'Ten Most Important Things to do To-Day' is of immense value to the salesman who adopts it and sticks to it. Ten calls may be far too many; three may be enough, but whatever is the standard, it should be aimed at systematically and thoroughly."

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UNIT TRANSFER CONTROL FOR GRINNELL ELECTRICS

Front or Rear Drive Made Possible With Single Set of Levers—Radical Feature Incorporated in French Brougham.

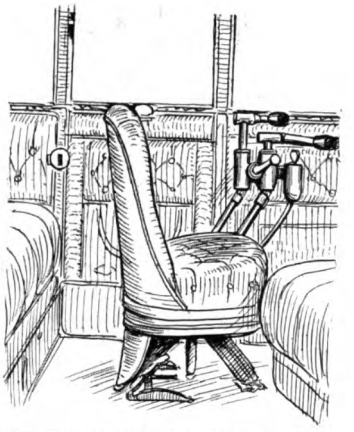
In what is styled a French brougham, which can be driven from either the front or the rear seat by means of a single set of levers, the Grinnell Electric Car Co., of Detroit, has developed and adopted a controlling system that is radically different from anything of the sort ever applied to electric vehicles, while the brougham itself incorporates a number of other highly desirable features that legitimately can be expected to increase the factor of safety and to make easier the work of the driver.

Specifically, the new system is styled by the manufacturers a "unit transfer control" and the designation comes very near to telling the whole story. As may be seen by the accompanying illustrations, control of the car is vested in a single set of levers constituting the usual lever steering arm and the controller handle which is mounted with it. By means of a system of ball and socket joints, the set of levers can be swung forward, when it is desired to drive the car from one of the front seats, or backward when the driver occupies one of the deeply cushioned rear seats. In either position the complete control mechanism is securely locked and cannot be moved except by specific intention of the operator. The lock for the controller handle is mounted just in front of the steering arm.

The use of this unit transfer control obviously necessitates the provision of duplicate brake pedals, one set being clearly shown in one of the pictures, which also shows the extension at the back of the swivelling front seat which effectually masks the pedals and prevents their operation by accident or design by those who may be occupying the rear seat.

Palpably, one of the principal advantages of the new control system is that it very effectually prevents any one other than the driver "fussing" with the controls during the time when the control of the car ought logically to be in the hands of but one person. A secondary, though none the less important advantage is that the construction is beautifully simple and that it occupies the minimum of room in either position. Incidentally, the single control makes for that degree of positiveness that is highly desirable in any car.

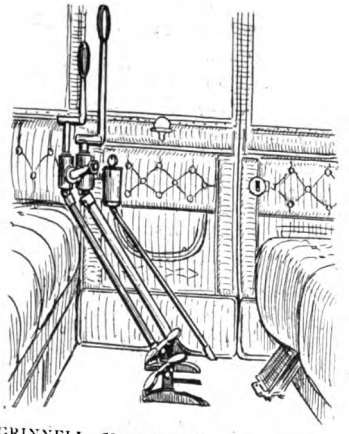
In other respects, the new brougham is a more than ordinarily roomy car, seating five persons comfortably, and upholstered with a view to obtaining the greatest possible freedom from the little jars that may not be absorbed by the spring suspension. The rear seat is wide and the front seats are of a double-motion swiveling type for which patents have been asked. The front driver's seat, of course, swings back. The body has been designed to eliminate un-



CONTROL SWUNG FORWARD SHOWING SWIVELING SEAT

sightly angles, to which end the back is patterned after the gasolene limousine fashion, except that the glass panels are so arranged that the driver is afforded a clear vision to the rear. Batteries are balanced, half being in front and half in the rear.

In the mechanical construction of the



GRINNELL SINGLE CONTROL "TRANSFERRED" TO REAR SEAT

car, Grinnell characteristics have been perpetuated, the motor driving through a straight shaft without intermediate reduction other than that afforded by the rear axle driving gears. Brakes, of which there are two sets operating on rear wheel drums, are controlled by pedals, one for the service and one for the emergency. Springs are full elliptic both front and rear and the wheelbase is 105 inches. The tread is standard, of course, and the wheels may be shod with either Motz electric cushion tires measuring 36 x 4½ or Morgan & Wright special electric pneumatics measuring 34 x 4½; in this case Knobby tread tires are fitted to the rear. The speeds, according to the controller, are 3, 8, 12, 18 and 21 miles an hour, and the capacity of the battery on a single charge varies from 65 to 100 miles, according to the nature of the roads.

The equipment, which is included in the price—$3,400—is as follows: Divided front window with storm tilting clear vision windshield; ventilator designed to exclude front wheel dust; the usual complement of lamps; interior dome lamps; cut glass bouquet holder; limousine clock; clothes brush with morocco holder; silk roller curtains, carpet; either electric horn or bell; and a complete assortment of the usual necessary tools.

Putting Graphite in the Public Eye.

As a supplement to the extensive newspaper advertising campaign that has been inaugurated by the Jos. Dixon Crucible Co., of Jersey City, N. J., as a means to stimulate the sales of its graphite products, the Auto Supply Co., of New York City, of which George Robertson is president, is one of a number of metropolitan supply dealers that have adopted with no small degree of success the "one idea" graphite window display.

The window that Robertson has chosen to receive the "graphite idea" is a broad one that faces on Columbus Circle, where it is certain to draw the gaze of the thousands of pedestrians who daily turn this busy corner into Broadway, and that it not only attracts attention but holds it as well is indicated by the fact that there are few who see it who can resist the temptation to stop. Incidentally, it is worth knowing that the display has resulted in a considerable quickening of graphite sales.

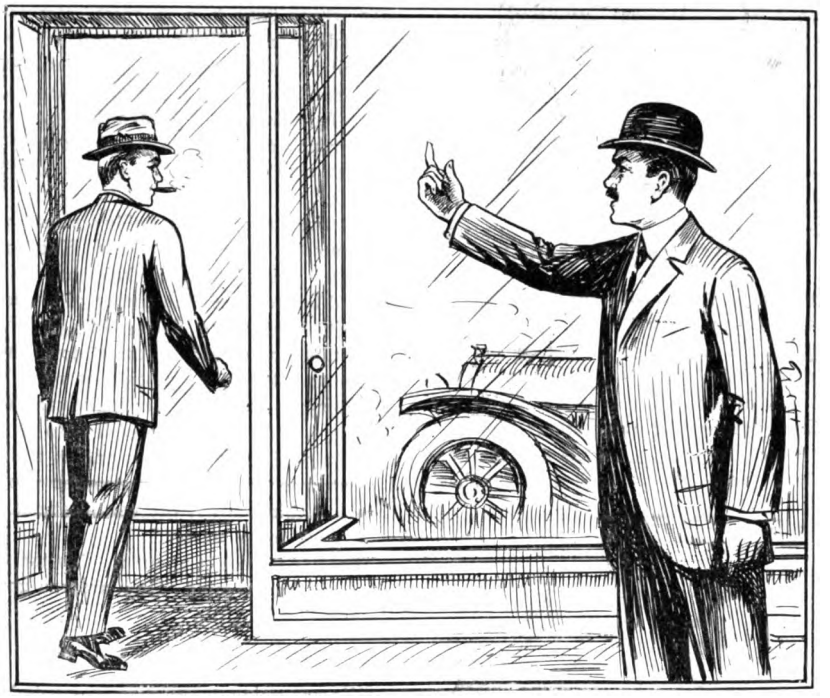
The idea around which the window is built is not a new one, though it is none the less effective. For a background there is a large, clear black and white drawing showing the top view of a stripped chassis. From every part of the chassis where graphite can be used to advantage as a lubricant white ribbons lead to small cards glued to the window, naming the part and the grade of graphite lubricant best suited to its needs. On the floor of the window there are little piles of dry graphite, and graphite grease flanked by pails of graphite lubricants of varying consistencies. Serving as a frame for the "picture," there are photographs of a number of well-known racing drivers who have used Dixon's graphite lubricants and who endorse them in letters which are attached to their pictures.

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NO "FLOOR MAN" THE TRADE'S GREATEST LAPSE

Meeting the Salesroom Visitor at the Door Vitally Important, Declares Reilly—Fresh From a Personal Experience, He Warmly Discusses With Sales Manager What He Says Is "Business Crime."

Reilly was deep in thought as he walked rapidly down the street, and his temporary abstraction was not yet dissipated as he turned almost automatically in toward the door of Merton Rossman's salesrooms. His foot was almost on the threshold and his hand was reaching for the door handle when



REILLY'S HAND WAS REACHING FOR THE DOOR WHEN HE HEARD HIS NAME CALLED

he turned with a start as he heard his name called in a voice he was not slow to recognize.

"Oh, hello, Jim!" he exclaimed with hand outstretched to the factory Sales Manager, who was approaching in the near distance.

"Wait a minute, I've got to see Rossman; then I'm going right back," said Reilly; then he added, "Come in with me; I won't be long."

The two stepped inside the salesroom and looked around; then they looked around some more—and then some. Upon the floor were two late models of the line Rossman handled, but Rossman was not in sight. Neither was his salesman, so Reilly and the Sales Manager began an inspection of the cars.

Finally a mechanic entered from somewhere in the rear of the place and of him was inquired where his employer, Rossman, might be.

"In the office, I guess," and he passed on with a gesture toward a door the two visitors had thus far not discovered.

Reilly and the Sales Manager moved back upon the floor and, peering through a door, discovered Rossman in his office reading a paper.

"Oh, hello, Reilly!" he exclaimed, as he threw down the paper and started to his feet.

"Came darned near stealing a car on you," said Reilly. "Didn't see any one to stop me, and I rather like the looks of that touring model."

After the Sales Manager and Rossman had been made acquainted, the former had strolled out onto the floor to permit the two dealers to transact their business. He was soon rejoined by Reilly, and the two departed.

Hardly were they upon the sidewalk when Reilly disgustedly exclaimed, "Jim, did you ever see anything like it? Did you ever see such a glaring example of bonehead business?"

"What do you mean?"

"This leaving salesrooms deserted and not having anyone to take care of people who come in."

"Oh!" replied the Sales Manager, the light dawning, "that's so common I didn't notice it. They all do it."

Measuring Neglect in Real Money.

"Yes, probably a majority, anyway, and that's what makes it all the worse. It certainly makes me disgusted with the whole darned trade to see the way some dealers run their salesrooms. They don't act as if they had an ounce of business sense or gave a hoot whether they did any business or not. Look at Rossman! We ambled around the salesroom floor by ourselves for five minutes and no one ever came near us. We could have walked out, and he didn't seem to care whether we did or not. Supposing we had been going to buy a car; how long would we have hung around there before we would have walked out and never come back?"

"Not long."

"And that one instance of a little lack of up-to-the-minute business management would have cost Rossman $400. If there are 20 dealers in town and each one of them did that once a day and lost $400, that would mean a loss of $8,000. That's more than the trade in this town can afford to throw away to-day, believe me! Dollars don't grow on bushes any more. Cars are sold, not bought.

Naming Greatest Lapse of the Trade.

"Why, Jim, it makes me sore, the way some of those dealers act. They need badly to be pulled up to a higher level and the trade made a better and a real selling business, but a lot of them just drift along in a don't-give-a-damn way and trust to luck to come out somewhere. If there is one thing which is in greatest need of a remedy it is that of not meeting people when they walk in the salesroom door. It is the greatest lapse in the trade. Not only that, but it is a business crime. You may remember how they used to teach us in Sunday school that there are sins of commission and sins of omission, and if this isn't a sin

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of omission, and a mighty big one, too, I'll eat—I'll eat——"

Reilly was stuck for words. His opinion on the subject was being hammered home with emphatic gestures, and the Sales Manager had been tacitly agreeing.

"I've talked it until I'm black in the face," contributed the Sales Manager, "and it doesn't seem to do much good. Some of our dealers have improved a little and some of them quite a little, but they don't seem to realize what it means to them. They all wolf about how they don't do the business they think they should and about how they would like to see their sales climb up, and all the time they are about as efficient as a wooden Indian that stands out in front of a cigar store holding out his hand. They hold out their hands with their wares and if a prospect walks in and buys, all well and good; but they are as far from the true merchandizing level as east is from west.

How a Near-Sale Was Chilled to Death.

"One of my neighbors down home was telling me about how he almost bought a —— car when he was in New York last spring. He said he was walking up Broadway with his wife when they saw a car in a window. It looked pretty good to them and they decided to investigate. I might add that if they had wanted to buy the car the price wouldn't have stood in the way at all; in fact, he later bought one of the highest-priced ones there is. He and his wife walked in and took a closer look at the car and wondered what the price was and so forth. They wondered for about ten minutes and then began to feel rather cheap and in the way when no one paid any attention to them, and the colored porter eyed them up but said nothing. When a salesman finally did decide to see what they wanted, they left. They——"

"That's just it, Jim!" exclaimed Reilly; "wife . . . is the dealer's opportunity for establishing the basis of all future relationships. Whatever reception the man gets is quite likely to have its influence on all his future relations with the dealer; if the dealer or a salesman meets him as soon as he enters and endeavors to answer the man's inquiries in a pleasant way, the man is likely to think better of the dealer than he is if he is allowed to wander around with no attention.

Embarrasses Buyer and Injures Dealer.

"Not only is the dealer passing up a big opportunity, but he is making the man who comes in feel like 30 cents. You know yourself just how it feels if you walk into a salesroom and have to hang around the floor for ten minutes with no attention. You begin to feel as if you were an intruder, and if you stay 12 minutes you wish you hadn't come at all. There is a dealer in town here who, so far as I know, never met a prospect on the floor but once, and that was an accident. The dealer just happened to be there when the man came in.



"NOT ONLY THAT BUT IT IS A BUSINESS CRIME," ASSERTED REILLY

"I can't understand it at all. Automobile dealers are supposed to be business men and salesmen, also, but they show a sad lack of something or other in this particular matter. Manufacturers' literature for dealers, the house organs and the good dealers' trade papers have laid emphasis upon this thing, and it is utterly beyond me to comprehend why all the teaching has no effect.



"IF YOU WAKE ONE DEALER YOUR WORK IS NOT IN VAIN," REPLIED REILLY

"Dealers who need instruction in how to run a business are advised to look to other lines of trade for inspiration and ideas. Can you imagine a grocery store, or a haberdashery, or any other store which would let a customer come in and stand around for a couple of weeks before asking him what he wanted. The improvement would cost nothing, neither in money nor in effort, and why it isn't made is a puzzle to me.

"Assuming that a man has a small selling force and that a couple of people happen upon the floor at the same time; he can very easily excuse himself with the man he is talking to, say a word to the newcomer and keep in touch with both of them, whereas if he entirely neglects the second man the latter may get tired of waiting.

One Salesman Always on Floor Duty.

"When a dealer has any kind of a sales force, one salesman should always be detailed to floor duty. If necessary, there should be a little desk up forward for the man whose duty it is to greet entrants to the salesroom. Having several salesmen and all of them anchored in chairs at the back of the room is like going to Nova Scotia to fight Mexico; the Mexicans may like to fight and might go to Nova Scotia to do so, but they'd hate to be put to all that trouble."

The two had reached Reilly's salesrooms and entered the dealer's office. The Sales Manager settled into a chair, but Reilly hooked himself over the corner of his desk.

"Reilly," said the Sales Manager, "I'm glad this happened. I came down here partly to ask you a question or two. We are going to start a dealer uplift campaign of a sort, and one feature of it is to be the taking up of certain things one at a time. I wanted to ask you your ideas on two or three. I think this is the very best one we could pick for a starter."

"There's no doubt about it. It's the one big fault, in my mind. How are you going about it?"

Plans Campaign of Dealer Uplift.

"We are going to start in in our dealers' bulletin and hammer on this one phase of the business. We're going to hammer hard and make the dealers take notice of it. We're going to be persistent and make them see that we have a definite object, that we believe in the idea and want it put into effect, and that we believe every dealer can better himself by adopting the idea. The dealers will thereby recognize that the idea is something more than mere space-filling matter and that we mean what we say. After we have pounded them on this one theme we will take up another, but we plan to stick to one at a time and for quite a time and not scatter our fire."

"Great idea, Jim!" exclaimed Reilly. "It ought to work. That persistence ought to win for you, and if you don't do any more than wake up one dealer in all your territory your efforts will not have been in vain."

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SUNDERMAN CARBURETTER IS SCIENTIFICALLY TESTED

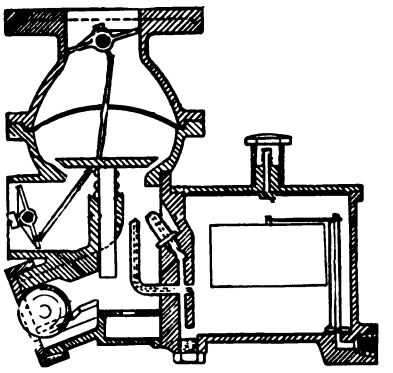
A. C. A. Tests Show How Motor Efficiency is Affected by Mixture Proportions — Flexibility Demonstrated.

Emphasizing the necessity for very careful carburetter adjustment, if true economy of fuel is to be expected, a series of tests of a Sunderman Safety carburetter, the results of which just have been made public by the Testing Laboratory of the Automobile Club of America, makes plain that no small variation in the air and gasolene constituents of the mixture may exist without materially affecting the power output of the engine. Needless to add, however, such variations exert a very powerful influence on the efficiency of the engine and serve to indicate once more the almost extraordinary range of the air to gasolene ratio that will furnish an apparently good mixture.

The Sunderman Safety carburetter, which is made by the Sunderman Carburetter Corp., of Newburg, N. Y., differs from others in that it has a check valve between the throttle and the mixing chamber that is calculated effectually to prevent the possibility of back fires reaching the gasolene in the mixing chamber. A section of the carburetter is reproduced herewith, from which it may be seen that fuel flows from the float chamber through two nozzles, the lower of which is termed the low speed nozzle, and is independent of the needle valve. The upper, or high speed nozzle is controlled by a needle valve the position of which, when once adjusted, is determined by a tapered link attached to the throttle and so arranged as to open the needle valve as the throttle is opened. The low speed air adjustment is controlled by a steel ball which lifts off its seat and the high-speed air enters past a butterfly valve the position of which is controlled by the safety valve. This safety valve is normally held off its seat by a spring, but its position is determined by a small rod hinged to a projection on the throttle valve and hanging free through a hole in the perforated screen below.

The engine on which the tests were made was a four-cylinder Northway with cylinders measuring 4⅛ x 4¾ inches, and for ignition a Bosch DU4 model magneto was used. Runs were made with three different throttle positions: Wide open; throttle set so that the brake load at the speed of maximum power was one-half that at the same speed in the wide open throttle runs; and with the throttle so set that the maximum speed was one-half that of maximum power. In each case the ignition was set for the maximum power at each of the speeds.

Just how much the proportions of air and gasolene in the mixture may vary without affecting the power output is revealed by the tests with the throttle wide open. From approximately 350 revolutions, when a little more than seven horsepower was developed on the brake, to 1,250 revolutions, the power curve rises without a break to a little more than 30 horsepower, though despite this fact the ratio of air to gasolene in the mixture varies from 14 to 1 at the start, through 13.6 to 1 at 850 revolutions, 13 to 1 at 1,000 revolutions, and a little more than 13 to 1 at 1,250 revolutions. At 1,665 revolutions, which gave 34.1 horsepower, the ratio was as much as 16 to 1, and at 1,800 revolutions, which gave 34 horse-



SUNDERMAN CARBURETTER SECTION

power, it dropped off again to 15 to 1. Obviously, therefore, the greatest thermal efficiency of the engine—18.6 per cent.—was obtained at a speed of approximately 1,665 revolutions.

On both the wide open and half open throttle runs, the consumption of fuel averaged 0.75 pounds per brake horsepower hour, and analyses of seven samples of exhaust gas showed an average of 11.0 per cent. CO_2, 1.2 per cent. O_2 and 1.9 per cent. CO. During several runs when the throttle was varied, the motor accelerated rapidly under load, though occasional backfires were noted. After the motor had idled at about 380 revolutions for five minutes a sample of exhaust gas showed 5.0 per cent. CO_2, 5.3 per cent. O_2 and 3.7 per cent. CO. When the throttle then was suddenly opened, the time required for the engine to accelerate to 1,000 revolutions was approximately seven seconds, and to 1,600 revolutions, 19 seconds. The lowest consumption of fuel recorded was .67 pound per brake horsepower hour at 1,665 revolutions with the throttle wide open, and the highest .93 pound at 468 revolutions with the throttle 13 degrees open.

LEFT STEER AND STARTERS ADOPTED FOR REGAL LINE

One Chassis Dropped and Unusually Few Changes Made in Others— Added Equipment Causes Increase of Prices.

Serving as the chief mark which distinguishes the newer products of the Regal Motor Car Co., of Detroit, Mich., from their predecessors, the steering column has been shifted from the right side to the left side and the control levers to the center of the footboard, which is in line with the prevailing tendency.

In the general overhauling that has been given the line, model H, an underslung touring car with a 4¼ x 4½ motor and selling at $1,400, has been dropped, and to compensate, in a measure, for the addition of complete equipment, including Rushmore electric lighting and engine starting apparatus, the prices of the remaining models have been increased. Model T underslung touring car now lists at $1,125 instead of $950; model N, underslung roadster, lists at $1,125 instead of $900; model NC, underslung coupe, lists at $1,600 instead of $1,250; and model C, which is the conventional overslung touring car, lists at $1,350 instead of $1,250.

In the mechanical construction of the cars, the only alteration of note is the substitution of a roller bearing clutch collar for the one that has been used in the past. Bodies have been materially improved, however, and given a much cleaner appearance by the elimination of all external protuberances, including the usual side lamps, and the location of the spare tire carrier at the back of the tonneau; the coupe has lost its Colonial appearance and now is of the more conventional form.

With the elimination of one chassis, two remain, and of them one mounts a 3¾ x 4½-inch motor and the other a 4 x 5-inch motor; wheelbases remain 108 and 116 inches, respectively. In both, the four cylinders are cast in a block and in both chassis the transmission elements include large diameter cone clutches, three-speed selectively controlled gearsets and, in the underslungs, semi-elliptic springs both front and rear; in the overslung car the rear springs are of the three-quarter elliptic variety.

Whereas all the cars with the exception of the model that has been dropped heretofore have been listed without equipment, all now have complete equipment, including the Rushmore electric lighting and engine starting system. All bright metal parts now are finished in nickel plate.

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"My Best Sale and Why I Regard It as My Best"

Making the Prospect Respect the Dealer's Determination Not to Become a Price-Cutter—How a Texas Salesman Engineered a Deal and Closed With a Man Who Already Had Made Up His Mind to Get a Discount.

By R. S. CARTER, Galveston, Tex.

SECURING LIST PRICE FROM AN INSISTENT PROSPECT THROUGH PERSEVERENCE AND INTEGRITY

Since February I have had the S—— agency, and during that time have made thirty-seven sales and secured the list price in each instance. Each of my customers is very well satisfied and boosting for me, and obtaining the list price at all times encourages this feeling. I believe this is a good record, in view of the fact that I had no advertised location until August 15th, when our new salesroom and service station were opened.

I believe the following was the most interesting sale I have made:

Telephone Call from Prospect's Wife.

Some few weeks ago my 'phone rang and a lady asked me for a price on a car, stating that she preferred a S——. I promptly endeavored to find out who she was, and quoted her the price. She refused to state who she was. Next day the same voice called up, and after quite a lot of persuasion on my part, she informed me that she was Mrs. R——. telling me that she was very anxious to get a car and that her husband also was interested. She requested me to call on her husband but cautioned me explicitly not to mention the fact that she had told me to call.

That day I called at her husband's office and explained my mission. He went up in the air, and the reason for his peevishness, as it later developed, was the fact that a friend of his had preceded me about 30 minutes, and upon learning that this gentleman was thinking of purchasing a car, had suggested that he would call on me and get me to offer him a commission which he would split with the customer.

When I quoted the prospective customer the list price, he would not listen to me at all; he practically ordered me out of his office, stating that nobody could hold him up, that he was experienced in the buying business and knew that he could do better.

When he went home to lunch he related his experience to his wife, who would have immediately explained everything but for the fact that they had visitors. As soon as possible she did explain and secured for me the privilege of another call.

I called the next day, and took Mr. R—— driving; he was very well pleased with the car, but held off purchasing. I worked on him pretty steadily for the following week with no satisfactory results.

Demanded a Cut of $48 in the Price.

On my next visit, he finally agreed to purchase the car if I would allow him a discount of $10 on the selling price, and furnish one tire and tire cover, making a total discount of $48, and he held out stubbornly for this concession for one week more. I resisted, stating that the list price was the selling price. Eventually he agreed to let the $10 go, but held out for the tire and tire cover. I could plainly see that Mr. R—— was going to stand his ground, especially in view of the fact that several other agents were pushing him hard and offering him liberal discounts.

It would, of course, have been a very simple matter to agree to this concession and make the sale. In the meantime Mrs. R—— was daily 'phoning me and had become very discouraged. After Mr. R—— made me the above proposition, I called up his wife and told her about it, explaining that I could not cut the price but would make her a present of the tire cover, which amounted to $3, if she would pay the $35, this, of course, without Mr. R——'s knowledge.

Allowed Wife to Pay the Discount.

I agreed to allow Mrs. R—— to do so at the rate of $5 a month, and Mrs. R——, knowing her husband's disposition and realizing the fact that I could not cut the price, finally agreed to it. I then immediately 'phoned Mr. R—— and asked for an appointment at three o'clock, at which time I agreed to close the deal upon his condition. He told me not to come until 4:30 and I very promptly grew nervous about the sale.

I 'phoned Mrs. R—— about my attempted appointment, and asked her not to answer the 'phone until after 4:30, explaining that this would avoid answering questions that might not be in favor of the sale. This she agreed to do. When I called at 4:30 the deal was closed. I secured the list price for a S—— 35 and Mrs. R—— made her husband a present of $35. Everybody is very well satisfied. This, I believe, demonstrates that a salesman can secure the list price if he perseveres.

Odd Means for Indoor Demonstrations.

As a means to the end, which is to obviate the necessity for asking prospective purchasers to step either into the garage or out into the street, the Packard Motor Car Co. of New York City has adopted an unusual method of making possible the demontsration of a car behind the plate glass of its palatial salesroom on upper Broadway. The demonstration car—one of the latest model "sixes"—stands in a corner of the room and leading from its exhaust pipe through a hole in the window sill to the outer air there is a long rubber hose that conducts the exhaust fumes out of the salesroom.

The hose is clamped to the exhaust pipe, making it a simple matter to demonstrate the ease with which any of the cars in the room can be started, for any of them can be connected to the extemporized exhaust pipe in a few minutes. The method also serves to demonstrate the quietness of the power plant, for, needless to add, even the slightest noise would be accentuated As the Packard is famously quiet in operation, the indoor demonstration is proving uncommonly effective.

Darkness that Makes Varnish "Green."

Although it is not generally known, light is absolutely necessary in the preservation of varnished surfaces. If a car is stored in a very dark garage, for instance, the varnish is likely to take on a greenish cast that no amount of washing will remove. The only remedy in this case is to rub the surface down with very finely ground pumice stone and water and supply a fresh coat of varnish. The obvious preventive is to not store the car in a dark place when it is possible to store it where the light can get at it.

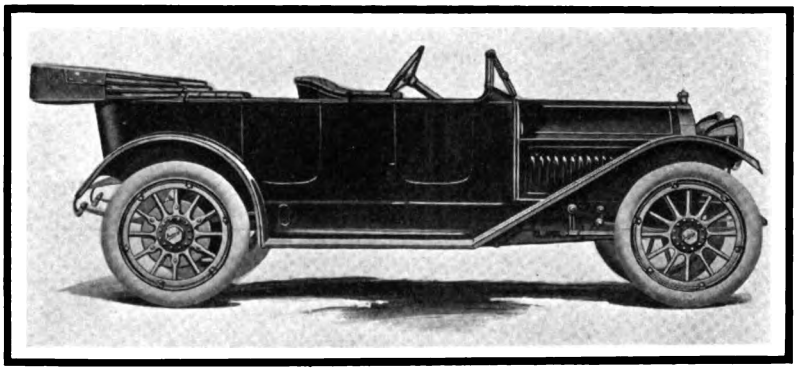
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IMPERIAL LINE LENGTHENED BY SIX CYLINDER MODEL

Another "Six" Replaces a "Four"—Three Four-Cylinder Machines Retained—All Electrically Started and Lighted.

An increased dimension here, an improved detail there—the various little things that the progressive automobile manufacturer finds to do in order that his product may be kept well abreast of the times—mark the revision of three of the four models that constituted the previous series of models built by the Imperial Automobile Co., of Jackson, Mich., and serve the purpose intended as well as emphasizing the fact that the Imperials did not need much tinkering to keep them up to date.

The most important thing, however, is that the line has been increased by the addition of a new and larger car—a "six" with a motor of 4⅛ x 5¼ inches bore and stroke—while model 44, formerly a "four," has been given a six-cylinder motor of 3¾ x 5¼ inches bore and stroke. All models now are electrically started and lighted.



IMPERIAL MODEL 34 WHICH SELLS FOR $1,650 WITH ELECTRIC STARTER

The new "six" is a typical Imperial, not only in general mechanical design but in appearance—in fact, throughout the line the only external change that is apparent at a casual glance is the fitting of inset dashboard lamps instead of the older type of bracketed sidelights. The motor of the new "six" is a Continental, as are all the Imperial motors in the latest series, and the cylinders are cast in threes. The unit power plant system is employed, the unit being hung on a three-point suspension. All the valves are on one side, the motor being of the L-head type. Ignition is by a dual system, with magneto for running and dry cells for starting.

A multiple disk clutch, with Raybestos-faced disks, transmits the power from the motor to the three-speed selectively controlled gearset, which is manipulated through a central lever; the steering wheel is placed on the left side of the car, is 18 inches in diameter and acts through a worm and gear mechanism. The rear axle is full-floating, with a pressed steel housing and 1⅝-inch chrome nickel steel shafts; the propeller shaft, of the same tough steel, is 1⅜ inches in diameter. The bevel gears have a ratio of 3½ to 1. Large annular ball bearings are fitted throughout the rear axle. In a big car big brakes are much to be desired; and in the new Imperial the drums are no less than 18 inches in diameter and the bands 2 inches wide; both service and emergency brakes work on the inside of the drums.

A drop of 5½ inches is given to the pressed steel frame to keep the body and the weight of the car low, for the sake of appearances as well as for more utilitarian purposes, such as convenience in getting in and out and stability on the road. Long, flexible springs support the car, 40-inch semi-elliptics in front and 53-inch three-quarter elliptics in the rear; the rear springs are underhung. Wheels are 36 inches in diameter, both front and rear, and all are shod with 4½-inch tires. The wheelbase is 137 inches and the tread the usual standard, 56 inches.

On the new chassis is mounted a roomy 7-passenger body which is ventilated by the action of the windshield as well as by ventilators in the doors. Regular finish is black, though special painting will be done at a slight advance in the price, which is $2,500, including standard equipment. The equipment includes electric starting and lighting system, as well as a generous outfit of the things that come under the category of equipment.

In metamorphosing model 44 from a "four" to a "six," the change has been complete, in its way, for there is little left of the older car except its model number and the distinctive Imperial appearance. The body still is a five-passenger touring, but it is more roomy than before, the increase of the wheelbase from 122 to 126 inches allowing leeway for the additional space. The motor, which, like that of the bigger "six," has its cylinders cast in threes, has a bore and stroke of 3¾ inches and 5¼ inches, respectively. In other respects, also, it is like the bigger engine. The likeness holds good, in fact, throughout the car, except that there is the difference that is natural and proper between a big machine and one that is less big. The tires are of the same size as those in the big "six"—36 x 4½ front and rear. The same finish and the same equipment, including electric starting and lighting system, are found in the model 44. The price, notwithstanding the enlargement of the machine and the augmentation of the number of cylinders in the motor, is $2,000, but $125 more than the older "four."

Model 34, which is a smaller five-passenger touring car, is possibly the least changed of any of the Imperials, for its specifications read just as they did before, though there are, of course, several of those little improvements that do not appear on the surface, but consist of betterment of material and workmanship and the like. The motor has four pair-cast cylinders of 4½ inches bore and 5¼ inches stroke, and, forming a unit plant with the three-speed gearset, is carried on a three-point suspension. The rear axle is full-floating, with malleable housing, and runs on plain nickel steel bearings, except for the annular thrust ball bearing behind the large bevel gear. The wheelbase is 118 inches, the tread standard, the tires 34 x 4 inches front and rear and the equipment practically the same as in the larger cars, including electric lighting and starting.

The specifications of models 32 and 33 are alike, except that in the former the body is a five-passenger touring and in the latter a roadster. The motor, formerly of 4 inches bore and 5½ inches stroke, now has a bore of 4¼ inches and a 5¼-inch stroke, the cylinders being cast en bloc and having the valves all on one side. Ignition is by dual system, with magneto and dry cells. As in all the other cars, the unit power plant system is employed and a multiple disk clutch drives to the centrally controlled three-speed selective gearset. The full-floating rear axle has a malleable housing, 1⅜-inch chrome nickel shafts and roller bearings; the final drive ratio is 3½ to 1. The wheelbase is 114 inches.

Both the front and rear tires are 34 x 4 inches. The equipment is practically the same as in the bigger models, not even omitting the electric lighting and starting, and the same black finish is standard with the small cars as with the more powerful machines. The price is $1,500, an increase of $215 over the former figure.

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HEXTER GAS-ELECTRIC TRUCK WITH SIMPLIFIED CONTROL

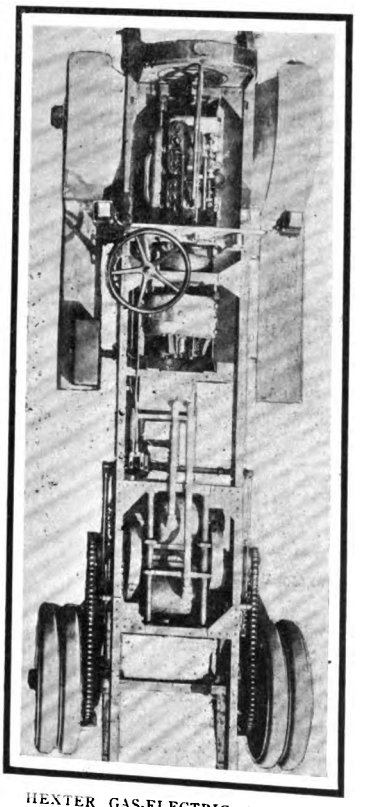
Clutch, Gearset, Bevels and Differential Eliminated—Driver Can Walk Beside Car and Control Power by Hand.

There are a few things that the good old horse will do that make him more useful in certain lines of human endeavor, such as peddling milk and ice, than the motor truck. For instance, the horse will "learn the route" and make the proper stops without prompting from the driver; or, if the beast is less experienced, the driver can walk beside the wagon. While it does not seem within the bounds of probability that a motor truck ever will "learn the route," a machine already has been evolved that can be driven from the sidewalk, to a certain extent, so that for moving short distances the driver can walk along beside the slowly rolling car with his hand on a lever which automatically returns to neutral when released and stops the machine.

The truck which includes the sidewalk control feature is equipped with an electric transmission system and is the Hexter truck, built by the Hexter Motor Truck Co., of New York. Its outward appearance is that of a conventional motor truck with the motor under a hood and with final drive by side chains. The transmission, however, is decidedly unconventional, though it is by no means new in principle or in general design. The engine is direct connected to a 7½ kilowatt generator and the current produced is led to two motors, one driving to each of the jackshaft sprockets through heavy spur gearing. There is no differential, the shaft being in two entirely separate parts, each carried on large ball bearings; the gears are placed between the bearings so that the stresses are distributed to the best advantage. The motors, though comparatively light and compact, have a high overload capacity and are peculiar in that they show high efficiency in the overload range, in which they differ from most motors, which are most efficient at normal outputs.

The control system and the way in which the car "handles" are the most striking features. There is no gear-shifting lever, of course, and as the time of ignition is fixed there is no spark lever. The throttle is controlled by a pedal, the service brake by another pedal; the emergency brake by the usual lever and the controller by a handle. The controller has two speeds forward and a reverse position. The highest speed is the ordinary running speed, the motors being in series-parallel. The lower speed throws the motors into series for extraordinarily hard pulling. It is stated, however, that the machine will handle an overload on almost any grade on the higher speed.

With the controller in the high speed position and the throttle closed until the motor turns over at less than 300 revolutions per minute, the current from the generator is insufficient to drive the truck, which can be left standing ready to move at a touch of the throttle pedal. It is this feature that makes it possible to control the car while walking along beside it, for



HEXTER GAS-ELECTRIC CHASSIS

the throttle pedal can easily be operated by hand. There is no such thing as jerking or jumping in starting the car or progressing from a lower to a higher speed. Acceleration is gradual, though rapid if the throttle is rapidly opened, and directly proportionate to the engine speed. By virtue of their electrical characteristics, the generator and the two electric motors automatically compensate for changes of load due to changing road and other conditions, so that the whole control of the truck is accomplished through the foot throttle except on the rare occasions when the controller must be thrown into the low-speed position. A very few minutes is sufficient to enable anyone to learn to handle the car, so far as the manipulation of the controls is concerned.

The normal rated capacity of the truck is 4 tons, but so great is the margin of safety that a 50 per cent. overload, or 6 tons, can be handled up and down hill with the greatest ease, it is claimed. The maximum speed, which is governed, is 12 miles an hour. The weight of the truck is the same as the weight of its normal load, or 8,000 pounds. The construction is substantial, as is indicated by the fact that the main members of the frame are of 7-inch channel steel. The wheelbase is 13 feet, the overall length 20 feet, the front tread 62 inches, rear tread 65 inches, and turning circle 44 feet. The front wheels are fitted with 37 x 5 single tires and the rear wheels with 41 x 5 duals. There is very little wiring, and what there is can be handled without fear of making mistakes in replacing, because of the careful system of tagging which makes proper connection a comparatively simple matter.

Why the Engine Refused to Fire.

The top of the magneto is no place for the young of the cat; the kitten ought to have known better than to choose such a resting place, but it didn't, and thereby hangs a tale. It is told of a motorist who did his own tinkering that after finishing a job in his own garage he repaired to his bed, leaving the engine hood up. In the morning he attempted to start his engine with but mediocre results; she missed fire badly. After he had got it to run, he heard a plaintive cry from somewhere in the internals of the engine that suggested no mechanical fault he had ever heard of. So he lifted up the hood—and found the kitten sitting on top of the magneto. Hence: When starting a motor, always remove the kitten from the top of the magneto.

San Francisco Fixes Taxicab Rates.

Emulating other cities which have legislated regarding taxicab rates, San Francisco has fallen into line with a maximum fare charge and considers making other restrictions later; the new ordinance states that 75 cents shall be the maximum charge for one or two passengers, with an additional 25 cents for each extra passenger, in the railroad, ferry and hotel district. The district is described as: Market and 5th to Howard, to 4th, to Townsend, to 3rd, to Howard, to the Embarcadero, to Broadway, to Sansome, to Bush, to Taylor and back to Market and 5th street.

Planning to Make Cars in Japan.

Efforts are being made to establish an automobile factory in Japan; the tentative corporation, located in Tokyo, is styled the Oriental Automobile Joint Stock Co.

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MANAGERS ENTRENCHED BEHIND STONE WALLS

Broadway Dealer Who Began When the Trade Was Young Says Managers Should Be More Accessible to Public—Calls That His Greatest Asset—Instances Where Such Walls Have Kept Trade Away.

"Get-at-ability" is advanced by motor car manufacturers as an attribute of the motors and other parts of their cars.

"Get-at-ability in managers" is considered equally as important, if not more so, by A. J. Picard, who deals in supplies and accessories as A. J. Picard & Co., at 1740 Broadway, New York City, and who is one of the veterans of the trade.

When one enters Picard's store he sees on either hand the showcases of goods; at the rear of the store, through an ever-open door, he sees Picard. If he wants to see Picard he walks in and sees him, and doesn't have to run the gauntlet of a young army of hall boys and stenographers to do so. Picard is "get-at-able," and to this fact more than to any other he attributes what measure of success he has obtained in his business life—as a dealer, first in cars and for the last two years in accessories and supplies.

The Open Door His Greatest Asset.

"I believe that is my biggest asset," he said to a Motor World man who walked in a bit timorously, half expecting to see a hall boy or stenographer bob up from somewhere and block the way, as they had on many previous occasions in other establishments. It was a more or less novel experience, and in explanation Picard continued, "To the fact that no man who wanted to see me ever had to give his pedigree before he could find me I attribute what success I have attained. If a man wants to see me, it has always been a rule in my business that he could see me. If he calls on the telephone and asks for me he gets me, and he doesn't have to give his name, address, telephone number and number of times he has been married before I answer. If I don't want to talk with him I can conclude the conversation in a very short time, but in any event he gets me.

"Many times I have come all the way down from the third floor, when I was selling cars, to see a man who had asked for me. No one demanded his pedigree and asked if some one else wouldn't do; they sent for me. Nine times out of ten it probably was a chauffeur looking for a job, but if I got one good one out of the ten, wasn't it worth it? And, if I didn't want to talk with the man I could get through with him in a very few minutes. Being called down nine times to see chauffeurs who want jobs is irritating—but the pay for the irritation comes on the tenth time."

Public Manager's Market and Master.

Picard entered the automobile industry when it was very, very young—away back in 1899. He sold a French car and did well at it, and is one of the trade's purple seal graduates of the School of Hard Knocks. Picard reduced the whole proposition to small proportions when he said, "The manager is the people's servant, the public is his market, and he should act accordingly."

"Too many managers in the automobile trade to-day," he continued, "are building stone walls about themselves. No one can get to them, in person or by telephone. I know whereof I speak from my own personal experiences. Whenever I sold a car it was always a hobby of mine to find out, if I could, why the man bought my car and not some other.

"One day a man walked into my salesroom and asked about the car I was selling. He looked it over and finally I suggested that we drive through Central Park and get a drink; I didn't ask him if he wanted a demonstration. We hadn't been out long when he pulled out of his pocket a check made out to the P—— Motor Co. and dated that very day. He said he had wanted one of those cars badly, but that when he went in that day the manager was upstairs and wouldn't come down to see him. The man, right in front of me, tore up that check and bought my car. All that lost the sale for the other dealer was that the manager wouldn't come down stairs.

"Another man, who had owned P——s for years and who swore by them, came in one day and, after looking at my cars, asked if I could let him have a limousine right away. I told him I could. Then he said he wanted a touring car, also. He also turned over to me his three P—— cars to sell. He had been on the point of buying another of that make, but when he went up to see the branch manager the manager said he couldn't see him that afternoon but would see him in the morning. He hasn't seen him yet, and that was several years ago.

Where "Cussing" Secured Audience.

"And just to show you how busy some of these managers are who can't find time to see a man: I had fixed up a difficult and nasty matter for a company whose sales offices are here in town and had arranged for them to get their pay for an electric system. I thought they would be glad to know about it, so one day I dropped in at their offices and asked to see the manager. The office boy said he was busy and couldn't see me. I'm a Frenchman, and just then I began to cuss a little. I told that boy that —— ——— when they wanted to see me ——— —— they could come down to my office.

"Just about that time the manager opened the door of his office and rushed out. He grabbed me by the arm, rushed me in,

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made me sit down and gave me a cigar. There wasn't a soul in the office with him and, so far as I could see, he hadn't been very busy, but I suppose he was upholding the dignity of his position.

"I frequently find it possible to help some of the dealers and branches to make a sale or two; I have assisted in making quite a few sales since I have been in the accessory business. Two friends of mine came in some time ago and wanted me to see what I could do for them in the way of new cars. Each of them had the money in his pocket and was ready to pay cash. I called up two dealers. One manager was in conference and the other was busy. The telephone girls in both places said the managers would call me up. Maybe they will, but I'm beginning to lose hope, for that was six weeks ago and I haven't heard from them yet."

Selling Rules in Picard's Store.

All of these experiences have had their part in formulating the rule that anyone who wants to see Picard sees him. Coupled with this are one or two other admonitions which constitute the only rule of selling that prevails in his store. That is: "Always be polite; see everyone who comes in, and pay just as much attention to a seedy suit of clothes as to a silk hat." And these things, too, are the result of 14 years in the trade.

"Old clothes shouldn't mean much to an automobile salesman; some of the wealthiest men in New York aren't over-particular about how they dress," he continued. "I got my first real lesson in that matter years ago when the cars I imported sold for $11,000 apiece. One day a man came in and began to ask about the cars. You could have bought his hat for five cents, his shirt for seven and a half and his tie for not more than three, but he talked with considerable mechanical intelligence and finally I took him out for a ride.

Rusty Suit Held a Check for $5,000.

"I took him up as far as 125th street. That was as far as he wanted to go; he said, 'I'll take two of these.' I thought he was crazy, as sure as fate, but as long as he didn't seem dangerous or threaten to shoot me, I thought I might as well take him back to the salesroom. When we got there, he said, 'I'll pay $5,000 deposit on these cars,' and reached in his dirty old vest pocket and pulled out a little bit of a check, made it out to me, and asked when I could have the cars ready. I told him within four days. He said he would be back in that time to pay the balance.

"I thought it was a joke and laughed when I showed the check to my salesman. But the next morning I told the salesman to take the check down to the bank and see what they would do with it. When he came back the salesman didn't even wait for a street car; he ran all the way and burst into the salesroom yelling, 'It's good! It's good!' The rusty looking man was the chief engineer for ——, the candy manufacturer, and men associated with him later bought 11 more of my cars.

Flashy Suit That Did Not Hold Check.

"I never was able to learn for certain—to have asked the man would have been an insulting question—but I always suspected from the way he acted that he had gone into some salesroom somewhere and gotten a rather chilly reception because he happened to have on a seedy-looking suit of clothes. I have always believed in being impartial in my treatment of people, but after that I made it my particular business.

"But it works both ways," laughed Picard. "One Saturday afternoon a swell-looking brougham drove up; there were all sorts of trappings on the horse and it was quite a turnout. Of course, those things can be rented, but this was a good imitation of the real thing. The young man dismissed the outfit, looked a car over, said he was stopping at the Waldorf and that if it would take him to Stamford and back he would buy it. He asked me to call for him at the Waldorf the next morning—a Sunday. I did so, and took him to Stamford and brought him back.

Prosperous Prospect a Shirt Clerk.

"He said that if I would call at the hotel the following Tuesday he would take the car and pay me for it. The following Tuesday I called at the hotel, but they said they never heard of such a man. Some weeks later I was passing Wanamaker's and I saw a silk shirt sale advertised. I went in, and there was my prospect behind the shirt counter. He tried to explain, but I said, 'You win, you win,' and bought some shirts."

One thing which is taboo in the Picard establishment was and is "knocking." "You often hear of the bad results of 'knocking,'" Picard said, "but not always do you get a concrete instance. But one day a man came into my salesrooms and said, 'I don't want to buy, I just want to look at the cars.' I volunteered to explain anything he wished explained. He finally said he had been over at the D—— salesrooms and that they said so many bad things about my cars that he just had to come over to see what kind of a thing I was selling. The result was that he never went back to report to them the result of his investigation. He bought of me."

Picard also maintains that no manager can lay down the law to a salesman as to how to sell cars, for every prospect is different. The salesman's biggest asset is tact, he says; he must study his prospect, learn the line of talk that the prospect wants and hammer him along those lines. And he shouldn't do what so many do and talk so long that he unsells the car after it is sold.

As to prospect report cards and follow-up systems, Picard doesn't believe very strongly in them. "I never made out one of these prospect pedigree cards and I never asked a man of mine to do it," he asserted. "Some of them are worse than the Bertillon system in the Tombs. It disgusts a customer to have a salesman ask him his name, address, telephone number, business, how many wives he's had and what his father's religion was. Some of those things the salesman may be able to find out through the use of tact, but even then the buyer of a high-priced car won't stand too much follow-up. If a man didn't want to be followed up I used to let him alone."

Oldtime Wrinkles That Are Still Good.

What used to be of importance in the earlier days was that the dealer be sure the cars on the floor would start easily and run and Picard suggests that it is not a bad plan at the present time to be sure the difference in climate between the factory and the salesroom, and other things, have not affected the car.

The electric starter, he stated, has made starting so easy that dealers often neglect to make sure their cars will keep running after the starter has set them going and sent them off the salesroom floor. Making sure of these and other things, he says, can do no harm and may do a world of good.

In regard to the accessory trade he states that an improvement could be made were the manufacturers not to give the same discount to rate-cutters and "fly-by-nighters" that they do to established dealers.

Battle Creek Regulates Horn Toots.

It may be necessary to get steamboat captains for chauffeurs in Battle Creek, Mich., if the present force of drivers finds itself unable to master the new code of toots and blasts which has been promulgated for use as traffic signals; anyway, it is a safe bet a steamboat captain would feel right at home in the fanfare of horns. The code states that one long blast shall be used to attract the attention of pedestrians; one short blast shall mean "Turn to the right"; two short blasts, "Turn to the left"; three short blasts, "Slow down"; four short blasts, "Back up"; two long blasts, "Straight ahead." When the drivers get those memorized they will be in condition to mastera really complete code of signals.

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NEBRASKA MEET SHORTENED BY MENENGHETTI'S DEATH

Tragedy on Half-Mile Track in First Day's Program Causes Abbreviation—Morris Shows the Way to Home Talent.

Louis Menenghetti, who during the last three years made quite a name for himself, not so much because of his ability to win as of his intention to win, meet promoters and the hippodrome "stars" notwithstanding, drove his last race on Wednesday, September 17th, at the first day of a three-day racemeet which was part of the program of a fall festival held at Norfolk, Neb. The Italian's Fiat skidded while he was endeavoring to negotiate one of the sharp bends on the half-mile dirt track at high speed and turned turtle, pinning the driver underneath when it brought up some 40 feet from the side of the track. Lombardi, the mechanician, escaped with a violent shaking up, but Menenghetti was instantly killed.

The race was the second number on the program, a pursuit event in which there were but two contestants, Menenghetti and Gaston Morris at the wheel of a National. Menenghetti had made three circuits of the course when the accident occurred. Morris was flagged immediately and the remainder of the first day's program was called off by the management.

Menenghetti was to have been the "star" of the meet, not another of the contestants, saving Morris, having been heard of outside of Nebraska. The Italian was playing in the leading role at the time of the mishap, having won the first event, an obstacle race, which went for five miles, in 8:05, leading home Milton, who drove a Mercer.

Interest in the speed carnival petered out after the mishap, so that on the second day of the meet but two events were run. Both were free-for-all events and both were won by Morris at the wheel of a National. On the third day, Friday, September 19th, but a single event was run, and that was not completed. It was a single mile time trial and Morris succeeded in rounding the course in 1:17⅖, which may or may not be a record for the course, but was hailed as one nevertheless. But when Milton, on a Mercer, attempted to emulate Morris's performance, he skidded in a manner similar to Menenghetti at about the same spot, and when his machine brought up it was minus a rear right wheel. Luckily the machine did not turn turtle, however, and the driver and mechanician were not thrown out of their seats in the car. The incident was depressing and the meet was called off, however. The summary:

Wednesday, September 17.

Five-mile obstacle race—Won by Louis Menenghetti, Fiat; second, Milton, Mercer. Time, 8:05.

Pursuit race—Called off after third lap, when Menenghetti met with accident.

Thursday, September 18.

Five-mile free-for-all, run in three heats—Final heat won by Gaston Morris, National; second, Book, Studebaker; third, Williams, National. Time, 7:50.

Ten-mile free-for-all—Won by Gaston Morris, National; second, Williams, National. Time, 15:06.

Friday, Septmber 19.

One-mile time trials—Gaston Morris, National. Time, 1:17⅖. Called, and remainder of program cancelled, when Milton skidded.

Boillot Takes Boulogne Grand Prix.

Adding another feather to his cap, Georges Boillot on Saturday, 21st inst., led home the field in the Grand Prix race for light cars that was run over the Boulogne circuit in France; he piloted a Peugeot car and his time for the 300 miles is given in cable despatches as 6.07:00. Goux, who took first honors in the annual 500-mile Sweepstakes race on the Indianapolis Speedway Decoration Day, was second, at the wheel of another Peugeot, in 6:17:00; and Guinness, in a British Sunbeam, was third in 6:18:00. The driver of the Buick entry struck a post-man and was wrecked. The weight limit was 1,980 pounds.

Moross and Troupe Visit Fort Wayne.

With a slightly varied program, including by way of diversion a race between a chariot drawn by a couple of horses and Burman in a big Benz, E. A. Moross and his performers trooped over into Fort Wayne, Ind., on Sunday, 21st inst., and furnished the last act for the County Fair, as he has furnished the last act for other county fairs. Needless to add, Burman was the whole show, not one of his "rivals" scoring a point. His best time was made in a one-mile time trial, the circuit of the dirt track being made in 50 seconds flat.

40-Mile Road Race Goes to Banks.

The winner of the 40-mile road race run by the Hibbing (Minn.) Automobile Association on Saturday, 21st inst., from Grand Rapids, Minn., to its home city, turned up in Frank Banks, who piloted a Velie across the finish line in 1:04:30; Fred. Smith, also at the wheel of a Velie, was second, in 1:05:18; William Messner was third in 1:07:56. A proposed track meet was abandoned.

OLDFIELD AND BURMAN VIE IN SETTING UP "RECORDS"

Each Gets One on Detroit Track in Spite of Existing Figures—Chandler Assaults the Fence in Five-Mile Event.

Rain spoiled one day of the two days racing that was scheduled to wind up the Michigan State Fair at Detroit—the program for Saturday, 20th inst., was abandoned—but time still remained on Sunday afternoon for Disbrow and Oldfield both to establish new "world's records," and this they proceeded to do—at least, according to the announcements that were made by Alex. Sloan, Esq.

Oldfield's "world's record" was made in a one-mile dash around the track in the old Christie front drive car, the clockers catching the flight in 49.40 seconds, which is something faster than 46⅗ seconds, according to those who made the comparison. Disbrow, who previously accounted for the five-mile Class E event, took his turn at shattering records in the five-mile free-for-all handicap, beating the field in 4:25.25, and though he himself drove the same distance last year in Cleveland in 4:06.58, he permitted the new time to be announced as a "record."

Aside from the establishment of "records," one accident served to increase the excitement of those who crowded the grandstands. Chandler, who had won the ten-mile race, swerved through the fence in the last event, and though his car was badly smashed and part of the fence was irrevocably ruined, he escaped with bruises. The summary:

Ten miles, class E, 300 inches and under—Won by Wm. Chandler (Mason); second, Ed. Rickenbacher (Mason); third, H. Ullbrecht. Time, 9:25.85.

Five miles, class C, 301-450 inches—Won by Rickenbacher; second, Ed. Hearne (Case); third, Endicott (Case). Time, 4:54.54.

Five miles, class E, 600 inches and under—Won by Louis Disbrow (Simplex); second, Rickenbacher; third, Endicott. Time, 4:38.56.

One mile time trials—Won by Barney Oldfield (Christie), time, 49.40; second, Disbrow (Simplex) ,time, 50.81; third, Endicott (Case); time, 52.31.

Three-mile novelty, two miles run, wheel changed and third mile run—Won by Hearne; second, Endicott; third, Rickenbacher. Time, 3:31.11.

Five miles, class D, free-for-all, handicap—Won by Disbrow; second, L. Heineman (Case); third, Hearne. Time, 4:24.25.

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SETS DAY FOR DEDICATION OF THE LINCOLN HIGHWAY

Association Selects October 31 as Day for Celebration Along Whole Route —Parades, Red Fire and Oratory Part of Plan.

Having launched its campaign of promotion of the Lincoln Highway, the Lincoln Highway Association now plans to dedicate the ocean-to-ocean road to the martyred President after whom it is named and has designated October 31 as the date for the dedicatory celebration. Not only the big cities, but every little village and hamlet on the route is expected to play a part in the ceremony.

On the night of October 31, just after darkness has fallen, the belt which will be traversed by the highway in its transcontinental course will be a stretch of light and noise, for, except for time belt differences, the celebrations will occur simultaneously. All along the route will be held torch light parades, men will march, motor vehicles will parade, orators will dilate upon the project and moving picture plays will demonstrate what can be accomplished through modern methods of road improving.

The program includes the decorating of the route with flags and bunting, and not only will automobiles and their owners and others interested in the trade take part, but the entire population along the route is scheduled to join in, for the Lincoln Highway is to be open to all traffic, with no tolls.

At the many meetings which are planned to be held, the promoters of the road will broach the changing of local designations for the highway and the adoption of the name which has been officially chosen by the association. If the route which lies through Marshalltown, Iowa, happens to be known as somebody's turnpike the suggestion will be made that that name be dropped and that "Lincoln Highway" be applied to the road.

The first of the markers which are to be used in designating the highway was placed September 15 at Clinton, Iowa, by W. F. Coan, president of the Clinton National Bank and Iowa State Consul for the Lincoln Highway Association. Other consuls have been appointed to receive the five-dollar contributions which the association is soliciting from the public generally and in exchange for which contributors' certificates are issued. Some of those already named, besides Coan, are:

Payson W. Spaulding, of Evanston, for Wyoming; E. P. Brinegar, chairman of the Lincoln Highway Committee of the San Francisco Chamber of Commerce, for California; H. O. Smith, president of the Premier Motor Mfg. Co., of Indianapolis, for Indiana; F. E. Edwards, of the Chicago Automobile Club, for Northern Illinois; C. L. Newcomb, Jr., chairman of the Lincoln Highway Committee of the Denver Chamber of Commerce, for Colorado; H. E. Frederickson, of Omaha, for Nebraska.

Following the dedication of October 31, which is a Friday, dedicatory sermons will be preached in churches along the route. The school children have their part in the great work mapped out, too; when Arbor Day comes they are to plant trees along the roadside to afford shade for the body of tourists of which the little ones may be a part by the time they and their trees attain maturity.

Savannah Does not Admit Defeat.

Despite repeated reports to the effect that the Vanderbilt and Grand Prize races were all but off, Harvey Granger himself, president of the Savannah Automobile Club, stated to a Motor World man yesterday that such is not the case. Granger went even further and put himself on record as saying that the races would not only be started but that in all likelihood there would be at least 12 cars, and possibly 15, at the starting line in both of the races.

Two entries already are in hand and paid for—both of them of Mercer cars—and negotiations now are pending which probably will result in the entry of three Peugeot cars, according to Granger, and it is expected that if these entries really are made Isotta-Fraschini, Stutz, Mason, and Bergdoll Special entries will follow immediately. But unless manufacturers and others can overlook the necessity for paying their entry fees and the freight on the cars and, waiving their requests for rebates, get their entries in the hands of the club before October 5th, both races will be abandoned. Although there has been some talk of staging the races on an eight-mile course in the vicinity of Trenton, N. J., it appears extremely unlikely that there would be time before the snow flies to get things in readiness in case the Savannah Automobile Club should abandon the contests.

Names Committee to Prevent Accidents.

The frequency of accidents in Chicago, caused by automobiles, street cars and railroad trains, has led Coroner Peter Hoffman to select a Public Safety Committee of 25 members with the object of lessening the number of accidents; the committee will investigate the situation, recommend remedial measures and will inaugurate an educational campaign for the instruction of the public in traffic affairs.

ENTRY LIST OPENED FOR 500-MILE SWEEPSTAKES RACE

Entry Fee Cut and Rigid Inspection of Steering Gear and Other Car Parts and Drivers Required—Prizes Remain the Same.

Although previous entry lists have not been declared opened until after January 1st, the entry list for the fourth annual 500-mile Sweepstakes race which is to be held on the Indianapolis Speedway, May 30th, 1914, already has been hung up and entry blanks are being mailed to the four quarters of the globe. In them there are several important changes from previous practices, most prominent among which is a reduction of the entry fee from $500 to $200, with the stipulation that half of this fee be returned in the event that a car actually starts in the race.

Furthermore, it is stipulated in the entry blanks that all steering knuckles and tie rods must be new two days before the contest and that aluminum steering wheels will not be permitted; all steering connections and frame hangers are subject to the approval of the Speedway engineer, and cars failing to meet with his approval will not be permitted to start. Similarly, drivers who cannot pass the examination of Dr. H. R. Allen, the Speedway surgeon, who will issue a certificate of their fitness, will not be permitted to start.

As was the case at the last race, cars having engines of less than 450 inches piston displacement only will be eligible, and they must not weigh less than 1,600 pounds; they must be capable of a speed of 75 miles an hour for a complete lap of the 2½-mile oval. Prizes are the same, $20,000 going to the winner and $30,000 being divided into nine other prizes for the next nine men to cross the line. In addition, the Wheeler & Schebler cup, the Remy brassard and the Prest-O-Lite silver brick will be put up again.

In preparation for next year's race, a new grandstand, to consist entirely of boxes, now is being put up; it will be a twin to the present paddock stand. Another stand, 500 feet long, will be put up on the straightaway stretch, increasing the seating capacity by 18,000. At the same time, water supply mains will be brought from Speedway City, across the way from the track, for fire protection.

Evil Results from Riding Rails.

The practice of running a car with the tires in the grooves of street car rails is said to be injurious in that it ruptures the fabric inside, where the damage is not visible.

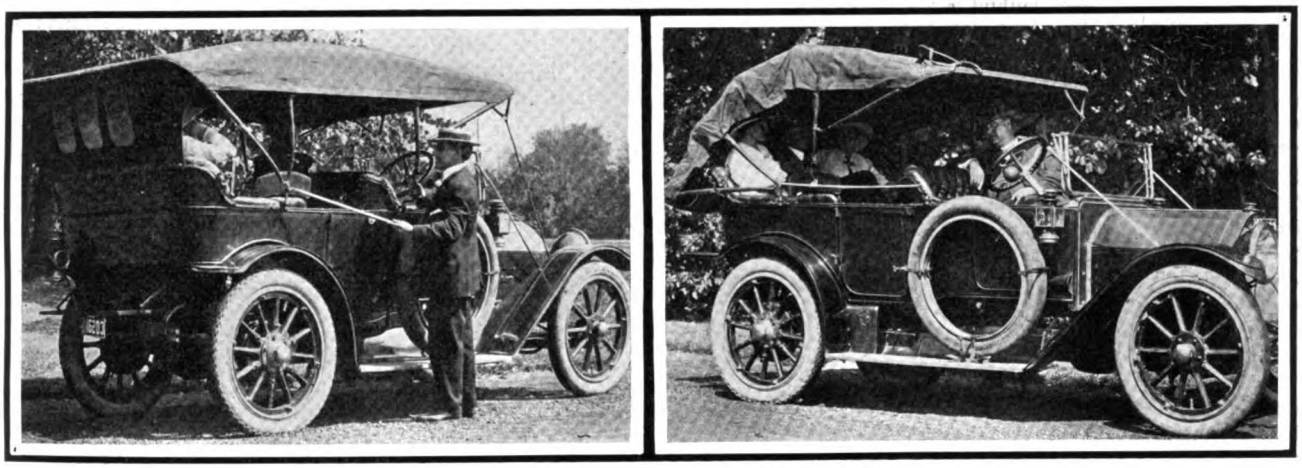
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DEVICE MAKES TOP RAISING EASY TASK FOR ONE MAN

Both Sides Go Up When One Side Is Lifted—Effective in Lowering as Well as Raising — Appliance Small and Simple.

One of the jobs that nobody likes, yet one that has to be done more or less frequently, is the raising and lowering of the top of the car; and the bigger the car the more disagreeable the job, under ordinary conditions. In fact, it is not an unusual thing for "all hands" to take hold and help along the erection of the covering.

It is with the idea of eliminating the more unpleasant part of the top-handling task that the Simplex Specialties Co., of Detroit, offers Green's top lifter. It attaches to the lower ends of the bows and guides them into position. The effect is the same as if a man could be on both sides of the car at once, for the lifter duplicates on one side what the operator does on the other side. The bows cannot become jammed or broken, the top cannot slip down and scratch the body of the car and, when not in use, the device is detached and stowed away, requiring almost no room for stowage. In lowering the top the lifter is equally effective; and the top can be either raised or lowered by one man without disturbing the occupants of the machine.



TWO VIEWS SHOWING METHOD OF APPLYING GREEN TOP LIFTER AND OPERATION OF THE DEVICE

"Astra" System of Carbon Removal.

The sound principles which underlie the oxygen system of removing carbon from the cylinders and piston heads of gasolene motors, and the satisfactory results which have attended its use, have made the manufacture of apparatus especially adapted to the work one of increasing importance. The decarbonizing of a cylinder is effected by projecting a jet of pure oxygen upon the carbon through a flexible nozzle inserted through a valve port or a spark plug hole and starting combustion with a lighter, taper or a match. The carbon is burned away, combustion being supported by the oxygen, and passes off as a gas, leaving the metal surfaces absolutely clean

As the tanked oxygen used for the purpose is under very high pressure—approximately 1,800 pounds to the square inch—it is necessary to employ a reducing valve and other fittings properly designed for the work, if continued satisfactory results are to be obtained. The "Astra" apparatus that has been developed by E. Raven Rosenbaum, of 603 West 43d street, New York, is built along lines that are the result of long experience in the handling of high pressure gases, and is simple in construction, effective in operation, and durable.

A complete decarbonizing outfit consists of the reducing valve—which, incidentally, is the most important of the mechanical parts—a specially constructed pressure gauge, 10 feet of high-pressure hose and the torch, which latter is simply a special form of needle-valve with a flexible copper tip which can readily be replaced after much bending and twisting have impaired its usefulness. All connections are made by means of ground joints. The oxygen tank to which the reducing valve is attached is loaned, without charge, for a period of 30 days, the only charge being for the oxygen; after 30 days a small rental charge is made. Empty tanks are exchanged for charged ones, the user paying for the oxygen only. The list price for the complete outfit is $35 f. o. b. factory. The standard tank contains 100 cubic feet of oxygen, which costs 2 cents per foot, or $2 per tank. The tank weighs 130 pounds and the balance of the outfit but a few pounds.

PREVENTING OTHERS FROM WALKING OVER YOUR HEAD

Accessory Company Advises Employes to Make Selves Bigger than Their Jobs—Says "Employer is from Missouri, Show Him."

Once upon a time, so it is said, a government employe at Washington was joked by a superior officer because of the employe's shining head, upon which there was scarcely a hair.

"No wonder," was the rejoinder, "with so many men walking over my head."

He was long in the service and faithful, and to give the story its "lived happy ever after" ending, he secured a promotion.

"Letting the other fellow walk over your head" is the latest topic in the series of short talks which the Weinstock-Nichols Co., accessory dealers, of San Francisco, Oakland and Los Angeles, is distributing in printed form among its employes, and had the old government employe had one of these little sermons slipped into his hand long before he might have preserved his hair. The advice, which urges the employe to demonstrate his worth before expecting advancement, says:

"You perhaps have met the employe who has said, 'You don't catch me doing any more work than I have to for the pay that I am getting. If the "Boss" wants more work he will have to pay me more money for it.'

"You doubtless have also seen this sort of an employe, as a rule, stand still, or worse yet, lose his job while younger workers have walked, so to speak, over his head to better positions with better pay.

"Employers the world over rarely, if ever, pay out more money to workers on mere

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prospects. Employers are like Missourians —you must first "show them."

"The salesman, for example, can only hope to earn more money until he proves to his employer that he is worth it. The only way he can prove this is by his work, by doing it at least a little better than others can do it; in this wise, making his results do the talking for him.

"Every stroke of work one does, every sale that a salesman makes during every hour of the day goes to make for him a record. Sooner or later this record comes up for review. The future of the individual depends upon what this record tells. If it tells, for example, that he is slow, lazy, indifferent or inefficient, he will be rated and treated accordingly. He will hold his job by a slender thread that is liable to snap at any time. If, on the other hand, his record tells that he is quick, faithful, reliable and efficient, this will do more for him than all that he can say for himself by word of mouth. It will give him a strong grip on his job, and if the work he is doing is worth more money, sooner or later he will get it.

"Your aim as a worker should be to fit yourself for better and higher things, even if these better and higher things are slow in coming. Make yourself ready for them when they do happen along. Make yourself bigger than your job. Fit yourself for a higher place and for greater responsibilities. Make yourself worth more money, even if the money should not come as fast as you hoped it might. As a salesman, give the customer in the way of intelligent service the best there is within you. Remember that the business world is just as hungry for efficient workers as it is for new customers, because it is the efficient worker that, as a rule, will lead to getting new customers.

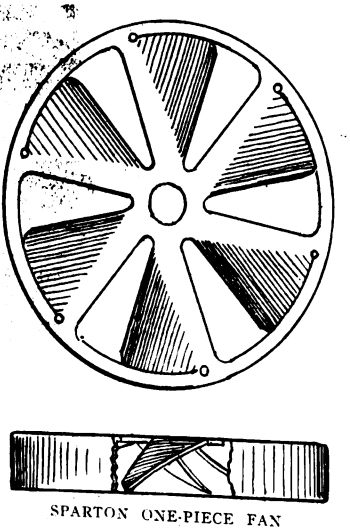
"Start out with the feeling that there is a lot of good stuff in you and that it is for you to bring it out. Let your highest qualities blossom and flower for your good, for the good of the business and for the good of the customer, and you will seldom go hungry for the want of a job and rarely find yourself out of the line of business growth and progress."

Graphite for Metal-Cutting Tools.

One of the curious uses to which graphite is put is the lubrication, if the term may be used, of lathe and other metal-cutting tools. The graphite is mixed with water and the water run over the point of the tool, just as oil is used under similar conditions. The graphite itself is so finely divided—or "de flocculated," as the makers express it—that it does not seem to feel the effects of gravitation but remains suspended in the water indefinitely. It is so fine that it will pass, with the water, through filter paper. Incidentally, no little difficulty was experienced when first the attempt was made to mix water and graphite, for the fine powder could not even be made wet, absolutely repelling the water. The difficulty was overcome by the use of a solution of tannin, which had the effect of making the powder wettable, so to speak, and assisted in causing it to remain indefinitely in suspension in the water.

Sparks-Withington Adds One-Piece Fan.

Not every one knows it, but despite the fact that casual inspection coupled with a merely superficial knowledge of the action of centrifugal force should make the fact plain, the fan that induces a draft through the radiator and helps dissipate the heat stored up in the cooling water, is subjected to considerable strain because of its rapid



SPARTON ONE-PIECE FAN

rate of rotation. Hence, it is absolutely essential that its construction be substantial so that there be not the slightest chance of one of its blades, for instance, or any other part of it, for that matter, flying off at a tangent at some unexpected moment, and not only ruining the fan but endangering both the engine and the radiator as well.

As a solution of this problem, the Sparks-Withington Co., of Jackson, Mich., which has been long and favorably known as the builder of fans of a number of different patterns, just has patented a new design in which the whole fan, blades, rim and all, is stamped out of a single piece of tough steel.

Hence it is impossible for the fan to fly apart at any speed it can be driven by the ordinary automobile engine. Instead of a very thin rim at the edges of the blades, the new fan has a rim 1¼ inches wide which not only effectually protects the blades for the whole of their width but acts as well to deflect the air back over the engine instead of allowing it to be thrown off the ends of the fan blades and to the sides of the hood.

Box Wrench Making Simplified.

There is no reason why anyone who can wield a hammer with a little intelligence should not have box wrenches to fit nuts of all sizes, for the making of a box wrench is by no means a difficult matter. The requisite materials are pieces of heavy steel tubing of the desired length and of inside diameters a shade less than that of the nuts to be fitted, a spare nut of each size for which a wrench is to be made, a hammer and something that will answer for an anvil.

A nut for which a wrench is to be made should be filed so that each of the flats will taper toward the hole, the length of the taper or chamfer being a little less than half the thickness of the nut. Then the tube should be carefully driven over the tapered end of the nut. After a little driving the tube should be hammered over each of the flats and then driven a little more, again hammered on the flats, and so on until the nut is all the way in and the flats are properly formed. Soft steel tubing will stand this kind of "cold forging," but the work may be done a little better and a little easier if the steel is heated to a dull cherry red.

As for the thickness of the tubing, it should be about the same as that used in regular bought box wrenches, though a little more weight will do no harm, and for occasional use for light work even thinner stock will answer.

If it is desired to make a double wrench, to take a nut at each end, the tubing can be stretched somewhat if it is rather heavy, by working it while hot, or else one end may be made for a square nut and the other for a hexagon. Another way is to use two short lengths of tubing of such sizes that one will telescope tightly in the other, and drive them together when the nut-boxes have been formed. Holes for a tommy-bar can be drilled in convenient positions, or a wrench used to turn the box, according to the individual ideas of the "manufacturer."

Mica and Graphite for Inner Tubes.

Powdered talc, the substance commonly used to dust on inner tubes to reduce friction between the tube and the inside of the casing, as well as to prevent adhesion, answers the purpose very well; but it is said that powdered mica and graphite are better and more durable lubricants for the purpose. They are less pleasant to handle, however, which accounts for the common employment of talc.

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DEVICES THAT DOUSE GARAGE FIRES QUICKLY

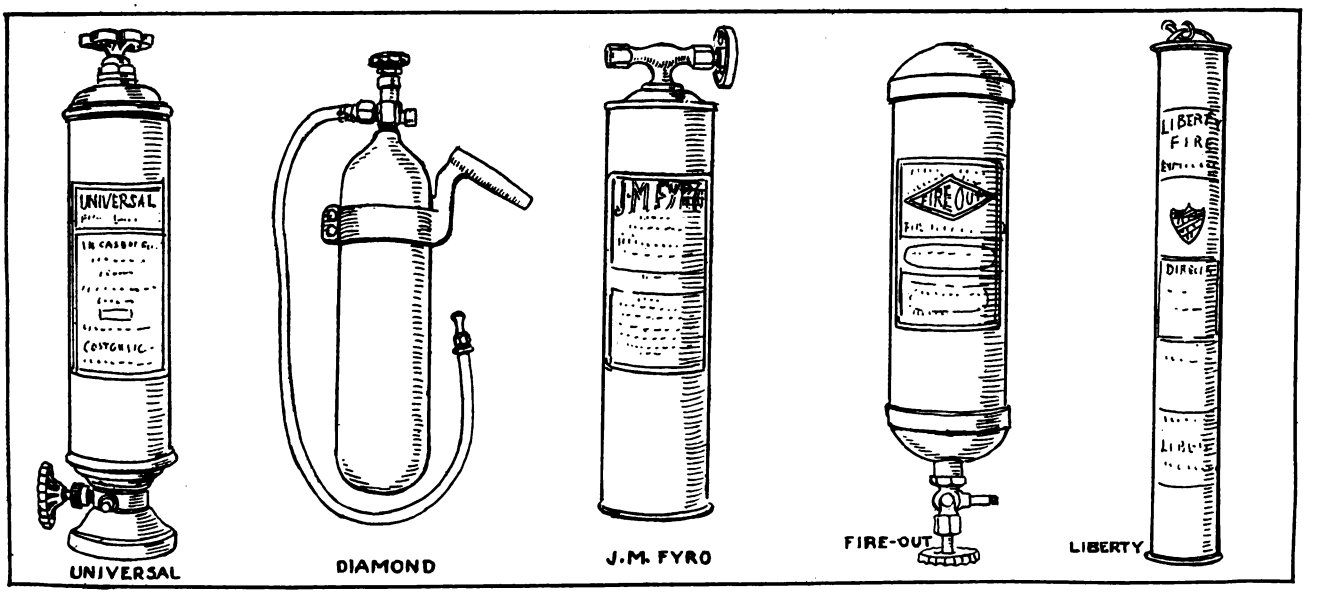
Why Water is Useless on Burning Gasolene and the Effect Chemicals Have on it—Smothering Incipient Blazes in the Garage—Some Portable Extinguishers Small Enough to Get Into Action in a Hurry.

"Fire! Fire!" yelled Sanderson, as he shot in through the open doors of the garage with his Klaxon blaring a note of genuine alarm and a faint black trail, steadily growing blacker, following him like a nemesis.

"Hey, Billy!" he shouted at the glass partition between the office and the garage, with Altreuter that time? Why, do you know how long it took me to get the sand out of Altreuter's motor after we got the fire out? I had to take the whole thing down. No, sir! Sand is about the worst possible thing you can use on a fire. It would not have been so bad if Altreuter had stopped his motor before he started warning. What would you do if you were out on the road and a backfire started the 'gas' in your underpan? You'd throw sand on it if there was any sand to throw, and you might put the fire out. But suppose there was no sand? Then what?"

"But——"

"No 'buts'!" interrupted Rea, leading the



FIVE DIFFERENT TYPES OF HAND FIRE EXTINGUISHERS SUITABLE FOR GARAGE OR EMERGENCY USE

after he had jammed on the emergency and fallen rather than jumped out of his seat, "come out here, will ya? And for the love of Mike bring some sand; never mind your hat"—as Rea reached behind his office door—"you'll find it plenty hot enough in a couple of minutes if ya don't shake a leg."

Rea came out on the run, sized up the situation as a carburetter fire, took one shot through the radiator with a dinky little brass tube that looked more like a tire pump than anything else and stood by and watched the expression of excitement and chagrin on Sanderson's face turn to one of astonishment and happiness.

"Well, well!" he ejaculated, "you're the greatest little fire-putter-out I ever saw, but how the dickens did you get the sand out o' that pump thing?"

"Sand nothing!" replied Rea, with a considerable degree of scorn. "Do you think I'd use sand after all the trouble I had to pile the sand in; but he didn't, and about a barrel of it was sucked through the carburetter and into the cylinders; and when we got the cylinders off the pistons and bearings were in a frightful condition. Never again!"

Necessity for Fire Protection.

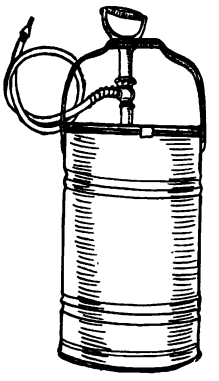
"Now, with this thing here," exhibiting a little brass cylinder about a foot long and three inches in diameter, "a couple of squires—p-sst! p-sst!—and the fire is out. Isn't it easy? Nothing to it. It's so easy you'd think everybody would have one handy, but that's the way with you fellows; you never think of fires until you smell smoke; you don't seem to think that you are carrying around with you a tank of stuff that will make the greatest little fire ever, and that it is liable to go up any minute. Of course, it doesn't often go up, but it can go up, and that ought to be your way into his sanctum sanctorum. "I've got a couple of fire extinguishers here and I want to show you how they work. I think it will do you a lot of good; and I think it will do me some good, too, for you are going to be surprised, and if you don't pass the surprise along to your friends I'll be surprised myself. And I'm going to talk pretty straight, too, for some day you will be out on the road with a bunch of smoke trailing you, and you won't have Billy Rea's garage to run into, either."

"All right," answered Sanderson in a resigned tone of voice, as he carelessly chucked a robe over the steam radiator and dropped into Rea's swivel chair, "but if you're going to lecture me, you might as well start at the beginning. Why can't I use water to put out a fire? They say it will merely spread a gasolene fire, but it don't spread any other kind of a fire."

"There you go, showing off your ignor-

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can't use water. Don't you know that gasolene, being oil, is lighter than water and that it will float on water? What happens when you chuck water on burning gasolene? The water scatters the burning liquid. The 'gas' floats on the water and spreads all over the place, and instead of a little fire you've got a great big one. Here's another thing to remember: Every



LIBERTY WATER PAIL PUMP

fire is the same size when it starts; it's the first five minutes that counts in every case.

Peculiarities of Fire Killing Chemical.

"That's why this little extinguisher is so valuable," reaching up on top of his rolltop and taking down the brass cylinder. "You aim it, same as you would a gun—or your finger—give a couple of squirts, and there isn't any more fire. You saw how it works; now I'm going to show you its works. Hold your hand till I give you a little of this 'dope.'"

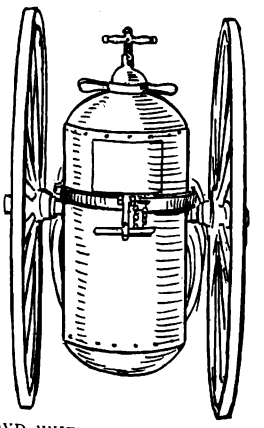
"Huh!" ejaculated Sanderson, "I know what that is; the wife uses it to take grease spots off my clothes. It's nothing but Carbona cleansing fluid—you-wouldn't-dare-do-this-with-a-match-stuff—that is advertised all over."

"You're right this time, only it is not called Carbona in this case; it's called Pyrene and, as you can see by the label, it's made by the Pyrene Mfg. Co., right here in New York City. And if you were a chemist—now don't rise up; I know you 'took' chemisty in school—I'd tell you it is carbon tetrachloride, for that is what it is, chiefly. There are several extinguishers on the market—I'll show the catalogs in a minute—in which carbon tetrachloride is used, and it is deuced funny stuff.

"In the first place, it smells kind of funny, doesn't it? And it evaporates nearly as quickly as gasolene evaporates. And it does not leave any stain when it's gone; it's harmless—it wouldn't even hurt a white silk dress. But you saw how quickly it puts out a fire. In reality it smothers the fire. Water quenches a fire, but carbon tetrachloride smothers it. Your own chemistry books will tell you—if you have forgotten it—that oxygen is necessary for a fire. Oxygen supports combustion, but it won't burn itself. So if you cut off the oxygen the fire must go out. That's what the carbon tetrachloride fire extinguishers do. As soon as the liquid hits the fire, the heat evaporates it into a blanket of chlorine gas and cuts off the oxygen; answer: Exit, fire. Simple, isn't it?

Fierce Electric Fires Easily Subdued.

"Is the gas poisonous? Not a bit of it. You can breathe it same as you would breathe air. It won't hurt you a bit. And here's another funny thing about carbon tetrachloride. It's a non-conductor of electricity; it won't short-circuit your wiring. I can take this little Pyrene gun and put out the fiercest electrical fire you ever saw;



BOYD WHEELED EXTINGUISHER

a 2,000-ampere arc has nothing on this little fire gun. I could extinguish that arc lamp up there—yes, right from my chair, here—just as easily as I put out your little piker carburetter fire. What do you think of that? You can't do that with any other kind of a fire extinguisher. And the only reason you can do it with the carbon tetrachloride kind is that the liquid contains no moisture."

"And consequently it won't freeze," interpolated Sanderson; "go on and show me how the thing works—why it squirts."

"That's simple enough. Take a look at this catalog picture (showing the one reproduced herewith). The insides of the thing are just like the insides of a double-acting tire pump and I don't have to tell you how they work, even though you have bought one of my 'elastic hoses.' To start the extinguisher, you turn the handle a little to the left, to unlock it. Then every time you pull the handle or push it, the stuff squirts out. And when it's empty you simply take the top off and fill 'er up again. If you don't use all the stuff on a fire you simply push the handle down and turn it to the right to lock it and the extinguisher is ready for the next blaze.

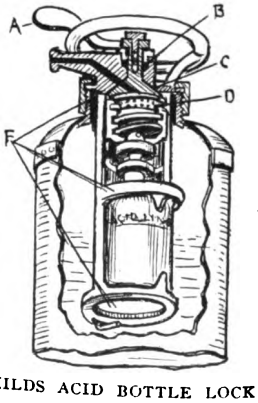
"The Pyrene extinguisher is not the only one of its kind, of course, though it is the only double-acting one. Just a minute, till I dig up a few catalogs.

Fire Guns That Act Like Tire Pumps.

"Here's one that is a good deal like the Pyrene, though as you can see by the picture here it is not double-acting. Yes, it's made by the Emmons Specialty Co. of Detroit, Mich. The casing is brass—15 x 2½ and weighs 3½ pounds filled—and the 'guts' are too simple to need explanation. At the top where the handle rod goes in there is a stuffing box to prevent leaks. The rod goes clear through the piston, as you can see, and this is so the gun will take up as little room as possible when not in use. To 'fire' the thing, you first pull the handle out and, when you get it out as far as possible, you turn it a little so as to catch the little tab on the end under the tab on the piston. Then when you push the handle down the piston goes with it and forces the death-to-fires out—after you've opened the pet-cock, of course. Expensive? Not a bit of it. You can get that one for about $4.50. Cheap insurance, don't you think?"

"Any more of these here—now—carbon Tetrazinnis?" asked Sanderson, tilting his cigar away from his nose.

"Just a few!" Rea answered. "Here are four more that are more or less alike. This one is the Electrene, made by the Electrene Co.; this one is the J-M Fyro—the J-M, as you may have guessed, stands for Johns-Manville; and this one is the Uni-



CHILDS ACID BOTTLE LOCK

versal, made by the Coston Signal Co. All three of these companies are located in New York. And this last one is the Fire-Out, which is made by the Inst Lighter Co. (it ought to be the Inst Outer company), of Columbus, Ohio. All four of them are filled with carbon tetrachloride and they can all be refilled quite easily.

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"In three of them the liquid is forced out by air pressure. This part sectional view here will show you how it's done in the Electrene. The outside cylinder is brass and it contains a movable piston supported by a light brass cage. To fill the thing you take off this bottom nut, poke the piston up as far as it will go with a wire, and put in the 'juice.' Then, after you have the bottom all tight, you attach an ordinary tire pump to the Schrader valve at the top and put in about 100 pounds pressure. The air can't leak out, first because of the Schrader valve; second, because of the valve cap, and, third, because of the heavy brass nut-cap that goes over the whole thing. And as the liquid is separated from the air by the floating piston, it is obvious that the gun can be used in any position, bottom side up or otherwise.

"Air pressure forces the liquid out in both the J-M Fyro and the Fire-Out, too, but in the Universal the liquid is forced out by gas that is imprisoned in a tiny capsule until the gun is used on a fire. When you turn the little wheel at the top, the capsule of gas is punctured, putting pressure on the liquid, and then when you turn the wheel at the bottom the liquid squirts forth and puts out the fire—if your aim is good. The principle is the same as the principle on which those home vichy siphons called 'Sparklets' used to work. If the fire is only a little one and only about half the liquid is used up, it is only necessary to put in a new capsule of gas to make the gun ready for the next fire."

Extinguishers That "Work On Gas."

"Speaking of gas," Sanderson butted in, "how about these big chemical tanks you see hanging around—in the elevated trains, for instance. Don't they work on gas, or how the dickens do they work, anyway?"

"Yes, they 'work on gas,' all right, as you express it. I'm getting to them; light your cigar. I've another I want to show you before we get to them.

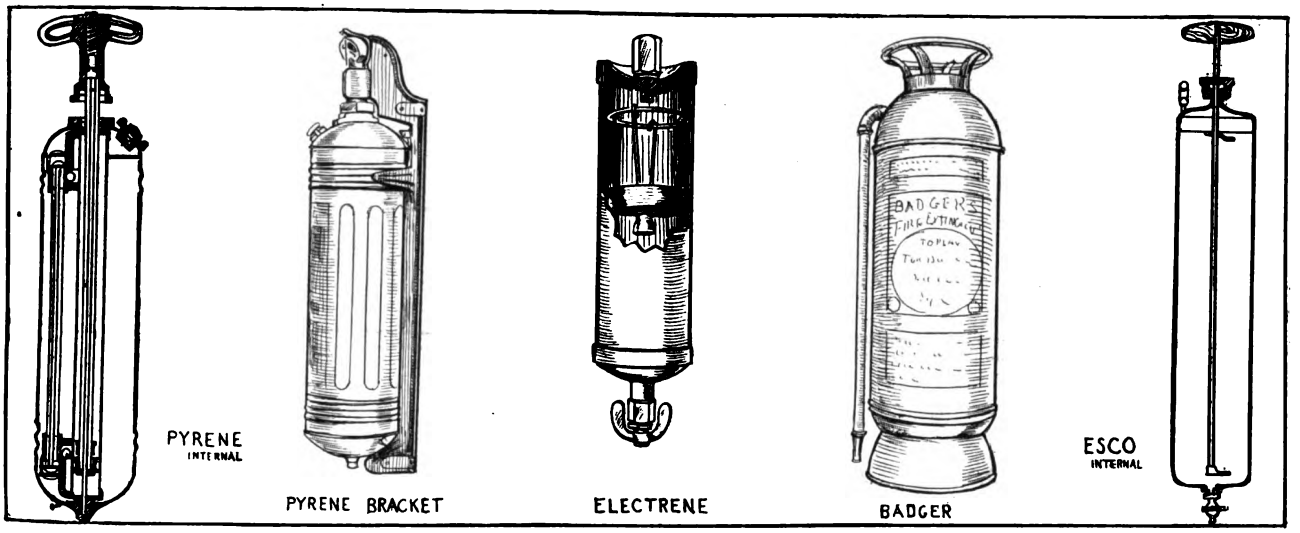
Simplicity of Water Pail Pump Type.

"This one," he continued, showing the picture that is reproduced herewith, "is nothing more or less than a pail of water with a double-acting force pump in it, and it's a mighty handy thing to have around, even though it is not much good on gasolene. In the first place it holds no less than six gallons of water, and it will put out a good-sized fire where there is no gas around; in the second place, it is cheap to operate, for you can refill it any time from the faucet. It's better than just a pail of water, for you can shoot a stream 50 or 75 feet with it—up to the ceiling, for instance. It's made by the Liberty Mfg. Association, of Chicago, Ill.

"And now for the ones 'that work on gas,'" continued Rea, as he dug up catalogs labeled Liquid Carbonic Co., New York; James Boyd & Bro., Philadelphia, Pa.; O. J. Childs Co., Utica, N. Y.; and Badger Fire Extinguisher Co., Boston, Mass. "A whole lot of people make them—I've got only a few catalogs here—and they all operate on exactly the same principle. First, I'm going to tell you how they operate and why—it'll only take a few minutes—and then I'll show you wherein they differ.

"In the first place, the principal ingredient in all of them is water, and because it seemed funny to me that a water fire extinguisher should be recommended for gasolene fires I called up a good friend of mine in the Fire Underwriters' Laboratory and asked him about it. He gave me a lot of interesting dope and cleared up one or two mysteries that had been troubling me for some time. But before I go any further let me tell you what else is in these big chemical tanks. As I said before, the principal ingredient is water, and dissolved in the water there is a certain amount of soda—common baking soda, like 'Cow brand' that your mother probably puts in the water with peas and beans to soften the skins; druggists call it soda bi-carb. for short, the whole name being bicarbonate of soda.

"Suspended above the soda solution there is a little bottle containing two or three ounces, depending on the size of the extinguisher, of sulphuric acid, or oil of vitriol, whichever you choose to call it. On any of these fire extinguishers you have ever seen it says, 'To play, turn bottom up.' When you do turn them bottom up, the stopper drops out of the acid bottle and the acid promptly mixes with the soda solution and causes a tremendous quantity of carbon dioxide gas; this gas, by the way, is exactly the same as the gas that bubbles up in a glass of ice cream soda, or of vichy, or champagne; it's absolutely harmless.



INTERIOR AND EXTERIOR OF FIVE MORE PORTABLE AND EASILY OPERATED CHEMICAL EXTINGUISHERS

Squirting Liquid Out With Gas Pressure.

"The formation of gas, of course, creates considerable pressure inside the fire extinguisher, and it is this pressure that forces the liquid out. Of course, it is not water—that is, it's not all water—it is a gaseous liquid that issues in a sort of a spraying stream. It is the combination of carbonic acid gas and water that makes the extinguisher so effective. The water acts to quench the fire and the gas to choke it, and between the two of them they generally are effective."

"Yes, but I should think the acid would play hob with anything it touches," Sanderson half questioned.

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"So do a whole lot of other people," answered Rea, "but the assumption is quite foolish, for the soda solution is alkaline, and you have been taught in school that an alkali always neutralizes an acid. Don't you jump for the ammonia bottle when you spill acid out of your storage battery over your clothes? Well, the soda solution has the same effect on the acid that the ammonia has on it. It makes it harmless.

Advantages of Different Type Chemicals.

"Of course, each of these types of fire extinguisher—carbon tetrachloride and soda-acid—has advantages of its own under particular circumstances. Thus, for instance, a soda-acid extinguisher is particularly valuable where the fire has gained some headway and is pretty hot. In this case the great volume of water has a cooling and quenching effect that is very desirable. Then again, if the fire is hard to get at and cannot be reached by ordinary means, the carbon tetrachloride extinguisher is very good, for it will smother the fire, even if it is a pretty big one. Obviously, where the voltage is very high, it is well-nigh impossible to use a soda-acid extinguisher on an electrical fire, for the water is altogether too good a conductor of electricity and the user of the extinguisher is likely to get a pretty good jolt. The carbon tetrachloride gun is best in the case.

"There is another kind of an extinguisher that is somewhat like the soda-acid one. The Liquid Carbonic Co. make it, and it consists of nothing more complicated than a very strong cylinder of liquid carbonic acid gas. When the cock is turned the gas escapes and smothers the flames. That's all there is to it.

Extinguishers That Won't Fire Themselves.

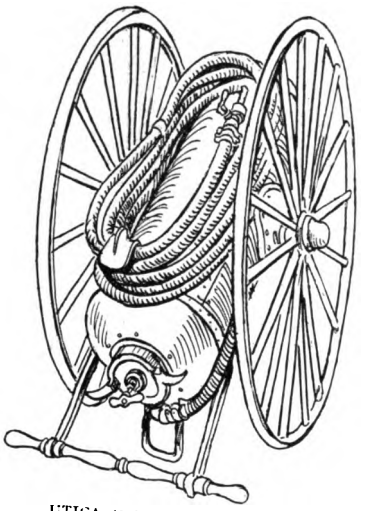
"Of course, you can't always carry one of these soda-acid extinguishers on a car because the jolting would be likely to spill the acid into the soda and some one would be likely to be squirted unexpectedly. Consequently, some of the makers, and among them the O. J. Childs Co., supply extinguishers of this type in which the acid bottle is locked. This picture will make plain how it is done. The extinguisher can't 'go off' then until it is deliberately 'fired.'

"The picture shows only the top of the extinguisher. See the acid bottle cage (pointing to F with a greasy fore finger)? A is the lever handle to the stop cock and E is the lead stopper. The face of the stopper is ground to form a tight joint with the top of the lip of the bottle, which also is ground. The packing ring B around the stem of the stopcock prevents leakage if any of the liquid should get through the joint at C. D is a strainer over the outlet. To operate the extinguisher you first turn the lever A to the left, permitting the stopper to fall out of the bottle, when the whole thing is turned over.

"There is only one little drawback to these soda-acid extinguishers that I can see, and that is that they must be charged every time they are used, regardless of whether they are emptied or not. Also, they must be recharged at least once a year and they must be protected from frost, for they will freeze solid if left out in the cold. But the recharging chemicals are almost literally dirt cheap, and it is not a difficult job to fill them up after they have been used. It can be done in a few minutes. Several makers produce non-freezing soda-acid extinguishers, too.

Same Principle Involved in Big and Little.

"As I have said, all of these soda-acid extinguishers operate on exactly the same



UTICA 40-GALLON CHEMICAL

principle, even the great big ones that are used by the fire departments. Most of them you merely tilt over to start in action, and when you want to stop them you turn them back again. I'll tell you why this is. The outlet is at the top, and when you turn 'em over the solution is forced out. When you turn 'em back again, the solution runs away from the outlet but the gas escapes. In some of the larger ones a wheel at the top is provided, and when this is turned it crushes the acid bottle, or otherwise liberates the acid. Thereafter their action is the same as the action of the hand-type extinguishers.

"Dust boxes?" reiterated Rea, in response to a half question from the very much enlightened Sanderson. "Sure, I know what you mean, all right, only it is not considered quite proper to call them by that name. They are generally called dry power extinguishers, and nearly every maker of chemical apparatus makes these, too. Their action is somewhat akin to the action of the carbon tetrachloride extinguishers, which is to say, they put the fire out by smothering it. They are awfully handy—there's one hanging on a nail by the coat rack—and they are great when the fire is brand new and you don't want a watery mess around. All you have to do is to grab the thing down from the wall; the cap stays on the hook the device hangs from and you chuck the powder at the base of the fire. Pretty soon there is no fire. That's about all there is to it. Because the powder is dry it can't freeze, and as the cap is tight it can't get out and moisture can't get in; so the powder never cakes or gets hard, and the beauty of the thing is it is always ready and never has to be recharged. Most makers supply new ones for any that have been used."

"So, now that you know a whole lot more about fire extinguishers than you did before I started, what are you going to do about it. I'll bet you're going to forget it all the minute you are out of the door, and the next thing I hear you'll be hollering for sand again. But if——"

"Not on your life, I'm not, Billy! I don't want to see the bones sticking out of the carcass of my machine. I'm going right out and get one now—and say, could you loan me yours till I come back?"

Causes of Varnish Spots and Cures.

Notwithstanding the fact that some varnish will spot less quickly than others, the fact remains that all varnish will spot sooner or later, unless it is intelligently cared for. Spotting is caused by the extraction of the oil from the varnish, and as mud splashes literally suck out the oil if permitted to remain, it follows that they should be removed as quickly as possible if the appearance of the car is to preserved.

Danger Due to Forced-on Nuts.

Although it often is possible to force a nut on a thread which it does not fit and thus to make a temporary repair, the practice should not be encouraged, for it is likely to degenerate into a bad habit. Sooner or later it will be forgotten that the wrong size nut has been used, and if it drops from some important place the car and the passengers may be endangered.

Carburetter Connections That Clog.

While cold weather still is a little in the future, just now is a good time to take a look at the hot water or exhaust gas connections for the carburetter jacket. Sometimes they get clogged up and refuse to do their work when called upon without preliminary attention.

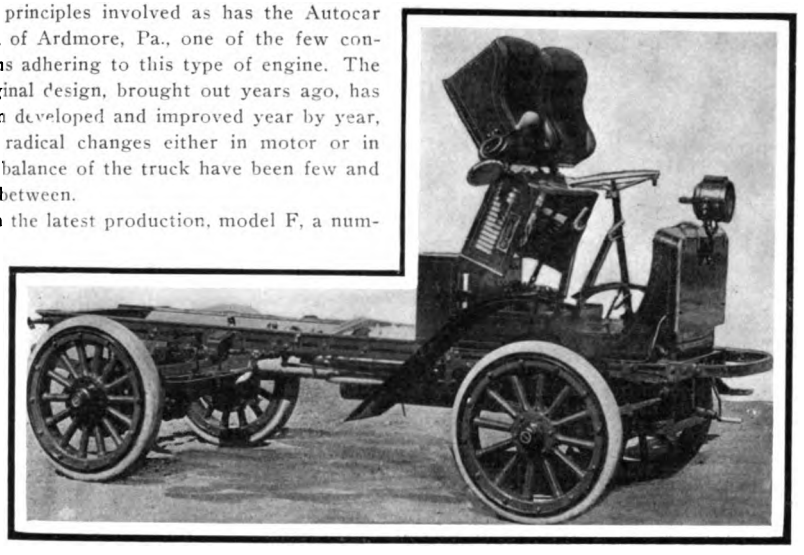
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PRICE AND GEAR LOWERED IN TWO-CYLINDER AUTOCAR

Details Are Simplified, Construction Strengthened and Capacity Increased—Old Principles Retained Without Change.

The simplicity, compactness, good balance and other advantages of the horizontal opposed gasolene motor have appealed to many manufacturers of commercial vehicles; but few have made such good use of the principles involved as has the Autocar Co., of Ardmore, Pa., one of the few concerns adhering to this type of engine. The original design, brought out years ago, has been developed and improved year by year, but radical changes either in motor or in the balance of the truck have been few and far between.

In the latest production, model F, a number of detail improvements have been made to the substantial betterment of the car; the chassis price, however, has been reduced from $2,000 to $1,850. In regard to the motor itself, it is practically unchanged—unless the cutting of grooves in the pistons and the drilling of oil passages from the grooves to the interiors of the pistons can be called a change. This arrangement has the effect of removing surplus oil from the cylinder walls and carrying it back to the crankcase, not only reducing the liability to smoke, but also materially cutting down the oil consumption. The most important change in the car, perhaps, is in the rear axle, and consists in reducing the direct drive gear ratio from 6.1 to 1 to 7.1 to 1, and in changing somewhat the arrangement of the mounting.



LATEST AUTOCAR CHASSIS, SHOWING HINGED HOOD AND SEAT

As in the past the Autocar final drive is of the double reduction type—that is to say, the propeller shaft drives to a short jackshaft by bevels, and the jackshaft drives to the differential through a spur pinion meshing with a spur gear on the differential. In the older models it was necessary to remove the casing carrying the bevel gears, jackshaft and spur pinion in order to get at the differential. In the latest model a plate has been placed in the forward side of the axle casing, so that it is an easy matter to reach the differential, while the bevels are easily removed in their own casing, as in the older type. The axle throughout is of substantial construction, of the full-floating type, and has a high road clearance, which is advantageous for suburban work.

A change that results in quieter operation and the elimination of wearing parts is the mounting of the water pump on the forward extension of the engine shaft, where it is driven without gears; formerly the pump was driven by rawhide gears. Also, the rotor has a bearing both front and rear, instead of a bearing on one side only, which makes for greater durability. The capacity of the pump has been increased, and the cooling further improved by the employment of a fan directly back of the radiator and working in harmony with the fan formed by the bladed flywheel. The clutch operating mechanism has been concentrated on one side of the car—the right—instead of being on the left side and operated by a pedal on the right.

Though former Autocar models have had their radiators protected by a buffer formed by what is practically a continuation of the main frames, the model F has, in addition, a steel member which crosses directly in front of the radiator and carries an outside bearing for the starting crank, as well as giving that much additional protection to the cooler.

The spring clips, which formerly were ⅝ inch in diameter, have been increased to ¾ inch, and other details have been correspondingly strengthened. As a result of the general strengthening—which, however, has brought only a slight increase in the weight of the machine as a whole—the load capacity has been increased from 3,000 pounds to 4,000 pounds and the gear reduction enables the motor to handle the increased load with ease. The use of a governor acting on the throttle is continued. Consistent with the increased capacity of the truck, the tires have been made larger. Formerly the tires were 3½-inch front and 4-inch rear, all 34 inches in diameter. In model F they are 4 inches front and 5 inches rear. When pneumatic tires, which are optional, are fitted they are 5 inches in diameter, front and rear.

Other features of the Autocar which remain unchanged are the channel steel frame, with hickory reenforcement; tubular front axle; semi-elliptic front and platform rear springs; three-speed selective gearset mounted on roller bearings; multiple disk dry plate clutch. The tread is 58 inches and the wheelbase 97 inches.

Control is effected along conventional lines, the driver sitting on the right side of the car with gear-shifting and emergency brake levers at his right and the usual clutch, brake and throttle pedals conveniently located. The maximum road speed is 20 miles an hour, the limit being maintained by the automatic governor.

When Careless Washing Ruins Bearings.

Despite the fact that ball and roller bearings almost invariably are properly installed and are protected from the entrance of dirt and of water by thick felt washers, it still is possible for a careless workman to do irremedial damage to them by injudicious use of the washing hose. If the hose is aimed squarely at the bearing housing and the water permitted to impinge against it full force it is quite likely to work itself into the bearing and, in any case, the felt washer is likely to be wet enough for the moisture to reach either the balls or rollers, as the case may be, or the races. Consequently water should never be deliberately squirted against bearing housings; if the water is merely flowed over them it will loosen the dirt almost as quickly and there will be less danger of rusty bearings.

To Stop "Gas" Valves from Closing.

When gasolene line valves are not equipped with notches to keep them open when they are supposed to be open they are likely to jar closed and cause annoyance. The trouble can be eliminated by slipping an ordinary, but rather heavy, rubber band over the handle of the valve and the pipe in which it is inserted. It will then be a simple matter to stretch the band off when the valve is closed, and there will be no likelihood of its closing without manual aid. The band can be put in place by unscrewing the union at the valve.

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1,055,332. Gas-Engine Starter. Stephen S. Krayer, St. Louis, Mo. Filed Feb. 19, 1912. Serial No. 678,517. (Ignition starter.) 12 claims.

1,055,346. Wind-Shield. Isaac G. McQuillan, Pittsburgh, Pa., assignor to Winterton Mfg. Co., Pittsburgh, Pa., a corporation of Pennsylvania. Filed Nov. 9, 1910. Serial No. 591,479. (Windshield hinge.) 3 claims.

1,055,349. Spark Igniting Device for Gas and Oil Engines. John Glen Newman, Moore Park, near Sydney, New South Wales, Australia. Filed Sept. 20, 1911. Serial No. 650,391. (Ignition system including pyrophoric igniting point.) 15 claims.

1,055,352. Carburetter. Charles J. Pembroke, Rochester, N. Y. Filed Aug. 9, 1911. Serial No. 643,243. (Carburetter with air intake controlled by perforated tapered sleeve.) 7 claims.

1,055,407. Radiator Construction. Virginius Julian Mayo, New Haven, Conn. Filed May 3, 1909. Serial No. 493,545. (Sheet metal radiator with interlocked joints.) 5 claims.

1,055,434. Radiator. Leon Williams, Toledo, Ohio. Filed April 13, 1912. Serial No. 690,583. (Sheet metal radiator with cooling fins.) 14 claims.

1,055,435. Controlling Means for Automobiles. Daniel P. Zapf, Canastota, N. Y. Filed April 12, 1910. Serial No. 554,939. (Control members carried on vertical columns.) 2 claims.

1,055,447. Resilient Wheel. Charley J. Craig, Lathrop, Mo. Filed Dec. 28, 1911. Serial No. 668,210. (Wheel with curved spring spokes.) 1 claim.

1,055,471. Brake Equalizer. Nils W. Kaunitz, Hoquiam, Wash. Filed March 25, 1912. Serial No. 686,052. (Rack-and-pinion equalizing mechanism.) 1 claim.

1,055,472. Tire. Martin L. Keagy, Canton, Ohio. Filed Aug. 2, 1911. Serial No. 641,907. (Cushion tire with three circumferential air cells.) 1 claim.

1,055,496. Vehicle Wheel Rim. Edwin Goupland Shaw, Akron, Ohio, assignor, by mesne assignments, to the United Rim Co., Akron, Ohio, a corporation of Ohio. Filed May 25, 1907. Serial No. 375,719. (Rim with contracting members for attachment.) 4 claims.

1,055,518. Antiskidding Device for Road Vehicles. Melville Clark, Chicago, Ill. Filed Dec. 4, 1911. Serial No. 663,703. (Disk device for preventing sideslip.) 3 claims.

1,055,542. Automobile Lamp. James Olandis Kendall and Thomas Orlean Robinson, Hanford, Cal. Filed Mar. 16, 1912. Serial No. 684,206. (License number cut out of front plate of lamp.) 1 claim.

1,055,550. Starting Mechanism for Explosive Engines. Herbert L. Meeder, Council Bluffs, Ia. Filed Mar. 11, 1912. Serial No. 682,908. (Fluid pressure started with two cylinders and rack-and-pinion action.) 3 claims.

1,055,553. Power Transmission System. Charles O. Pearson, New York, N. Y. Filed Sept. 12, 1908. Serial No. 452,756. (Hydraulic transmission system.) 30 claims.

1,055,554. Power Transmission System. Charles O. Pearson, New York, N. Y. Filed Oct. 8, 1908. Serial No. 456,699. (Hydraulic transmission system.) 17 claims.

1,055,557. Pneumatic Power Transmission Mechanism. Frank M. Prather, Los Angeles, Cal. Filed Nov. 7, 1911. Serial No. 659,066. (Pneumatic transmission enclosed in flywheel.) 4 claims.

1,055,558. Means for Lubricating Internal Combustion Engines. Louis Renault, Billancourt, France. Filed Apr. 9, 1910. Serial No. 554,549. (Pump circulation oiling system.) 3 claims.

1,055,569. Multiple Unit Power Transmission Mechanism. August Sundh, Yonkers, N. Y., assignor to Otis Elevator Company, Jersey City, N. J., a corporation of New Jersey. Filed Apr. 3, 1909. Serial No. 487,700. (Electrical transmission system.) 29 claims.

1,055,609. Motor Sleigh. John Chesney, Melita, Manitoba, Canada. Filed Feb. 5, 1912. Serial No. 676,626. (Motor sleigh with chain wheel drive.) 1 claim.

1,055,611. Convertible Engine and Compresso. John S. Clarke, East Cleveland, Ohio. Filed Nov. 20, 1911. Serial No. 661,306. (Radial cylinder motor convertible to an air compressor.) 4 claims.

1,055,619. Hydraulic Transmission Mechanism. William Dunn, Bannock, Mont. Filed Apr. 27, 1912. Serial No. 693,603. (Control system for hydraulic transmission.) 18 claims.

1,055,626. Clutch. Walter O. Foss, Branford, Conn., assignor to Charles E. Bunnell and Richard Bradley, Branford, Conn. Original application filed Mar. 2, 1911. Serial No. 611,932. Divided and this application filed May 20, 1911. Serial No. 628,513. (Clutch with separate engagements for different gears.) 1 claim.

1,055,635. Traction Engine. Henry J. Heider, Carroll, Ia., assignor to Heider Mfg. Co., Carroll, Ia. Filed Feb. 20, 1911. Serial No. 609,681. (Transmission system for tractors.) 5 claims.

1,055,677. Transmission Gearing. Jason C. Sparks, Concord, Neb. Filed July 6, 1912. Serial No. 708,076. (Friction transmission system.) 2 claims.

1,055,693. Explosion Engine. John Albert S. Anderson, Springfield, Mass. Filed Feb. 20, 1912. Serial No. 678,820. (Double-acting engine.) 4 claims.

1,055,709. Automobile Wheel. William W. Cheeseman, Cincinnati, O. Filed Feb. 29, 1912. Serial No. 680,620. (Disk wheel with spring cushions.) 12 claims.

1,055,708. Heater or Muffler Attachment. Harold S. Case, Standfordville, N. Y. Filed Apr. 4, 1912. Serial No. 688,540. (Exhaust heater.) 1 claim.

1,055,741. Speed Governor for Motor Vehicles. Edward A. Halbleib, Rochester, N. Y. Filed Aug. 4, 1911. Serial No. 642,316. (Ignition governed by exhaust pressure.) 17 claims.

1,055,742. Spring Wheel. Charles W. Ham, Memphis, Tenn. Filed Apr. 1, 1912. Serial No. 687,679. (Wheel with curved spring spokes.) 3 claims.

1,055,744. Strainer for Gasolene Tanks. Edmund E. Hans, Minneapolis, Minn. Filed Apr. 11, 1910. Serial No. 554,891. (Settling bowl and strainer below tank bottom.) 4 claims.

1,055,750. Resilient Wheel. Robert J. Hughes, Houston, Tex. Filed Dec. 31, 1907. Serial No. 408,716. (Wheel with cushions under sectional tire.) 2 claims.

1,055,765. Automobile Cultivator with Rotatively Driven Cultivating Disks. Marcel Landrin, Soissons, France. Filed Nov. 11, 1911. Serial No. 659,692. (Motor disk-plow with power-driven disks.) 9 claims.

1,055,769. Engine-Starting Mechanism. Carl E. Lipman, Beloit, Wis., assignor to The Lipman Manufacturing Co., Beloit, Wis., a corporation of Wisconsin. Filed Jan. 15, 1912. Serial No. 671,212. (Fluid pressure starter.) 8 claims.

1,055,774. Pneumatic Tire Casing. Nelson W. McLeod, St. Louis, Mo., assignor to American Tire Co., St. Louis, Mo., a corporation. Filed May 10, 1912. Serial No. 696,292. (Fabric threads held in tension by vulcanized rubber.) 1 claim.

1,055,813. Illuminated Number Plate for Motor Vehicles. Warren H. Seaser, Fresno, Cal., assignor of one-third to Frank L. Noble, Fresno, Cal. Filed Feb. 2, 1912. Serial No. 674,986. (Frame for front of lamp, carrying license number figures.) 1 claim.

1,055,834. Controlling Mechanism for Motor Vehicles. Milton Tibbetts, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed Feb. 5, 1909. Serial No. 476,485. (Throttle and accelerator control with interconnecting device.) 23 claims.

1,055,835. Resilient Wheel. Frederick F. Tighe, New York, N. Y. Filed Aug. 24, 1911. Serial No. 645,700. (Wheel with spring-cushioned plunger spokes.) 1 claim.

1,055,849. Roller Bearing. Oswald F. Zahn, Detroit, Mich. Filed une 26, 1911. Serial No. 635,431. (Spacer for roller bearings.) 1 claim.

1,055,895. Resilient Wheel. William John Faber, Oneida, N. Y., assignor of one-half to Christian C. Faber, Brooklyn, N. Y. Filed June 13, 1912. Serial No. 703,424. (Pneumatic cushion under rim.) 2 claims.

1,055,902. Gradometer. George O. Griffith, East Auburn, Cal. Filed Dec. 19, 1911. Serial No. 666,690. (Gradometer with gear movement and fan check.) 1 claim.

1,055,915. Acetylene Storage Tank. Joseph Hidy James, Pittsburgh, Pa., assignor to Searchlight Gas Co., Chicago, Ill., a corporation of Delaware. Filed Oct. 16, 1911. Serial No. 654,868. (Acetylene tank with corn pith filling.) 5 claims.

1,055,923. Lock for Motor Vehicle Steering Wheels. Louis E. Landes, Los Angeles, Cal. Filed Nov. 25, 1912. Serial No. 733,488. (Lock securing steering wheel to column.) 2 claims.

1,055,978. Engine Starter. Jacob Liebfried, Los Angeles, Cal., assignor of one-fourth to Edgar Lawrence Nicholson, Los Angeles, Cal. Filed July 1, 1912. Serial No. 707,572. (Distributing system for ignition starter.) 10 claims.

1,056,013. Tire Vulcanizer. Charles I. Dodson, Pittsburg, Kans. Filed Jan. 29, 1912. Serial No. 674,088. (Steam vulcanizer.) 8 claims.

1,056,098. Timing Device for Magnetos. Otto Heinrich Hugo Heins, Edgewater, N. J. Filed Feb. 19, 1908. Serial No. 416,569. (Variable timing device.) 2 claims.

1,056,107. Wheel. James A. Lowe, North Branch, N. J. Filed Sept. 2, 1911. Serial No. 647,391. (Spring Wheel with coiled springs acting through toggles.) 4 claims.

1,056,109. Vehicle Wheel. William B. McFadden, Syracuse, N. Y. Filed Sept. 15, 1910. Serial No. 582,206. (Pneumatic tire under rim.) 1 claim.

1,056,156. Demountable Rim. Albert Denis, Springfield, Mass. Filed Oct. 7, 1911. Serial No. 653,318. (Quick detachable rim with screw fastenings.) 1 claim.

1,056,167. Cushion Tired Wheel. Norman Gratz, Boise, Idaho. Filed Feb. 6, 1912. Serial No. 675,747. (Wheel with both spring and rubber cushions in tire.) 5 claims.

1,056,185. Spark Plug Demonstrator. George F. Kreitlein and Harry L. Roeger, Indianapolis, Ind. Filed May 31, 1912. Serial No. 700,572. (Display device for spark plugs.) 4 claims.

1,056,235. Device for Jacking Up Automobiles or Other Vehicles. Hosea S. Tuttle, Minneapolis, Minn. Filed Apr. 3, 1912. Serial No. 688,319. (Lever and toggle jacking device.) 4 claims.

1,056,253. Engine Mounting. Charles E. Brooks, St. Louis, Mo., assignor to Brooks-Latta Automobile Mfg. Co., a corporation of Missouri. Filed May 29, 1911. Serial No. 630,212. (Hinge joint in ends of supporting arms of crankcase.) 3 claims.

1,056,265. Horn for Motor Cars and Other Vehicles. Amedee Couesnon, Paris, France. Filed Feb. 7, 1912. Serial No. 675,994. (Horn operated by power-driven air pump.) 2 claims.

1,056,278. Vehicle Wheel. Thomas B. Jeffery, Kenosha, Wis.; Kate E. Jeffery, Charles T. Jeffery, and Harold W. Jeffery, executors of said Thomas B. Jeffery, deceased. Filed Oct. 13, 1906. Serial No. 338,713. (Wheel with split rim and spokes with attached heads adapted to be clamped to lugs on rim.) 5 claims.

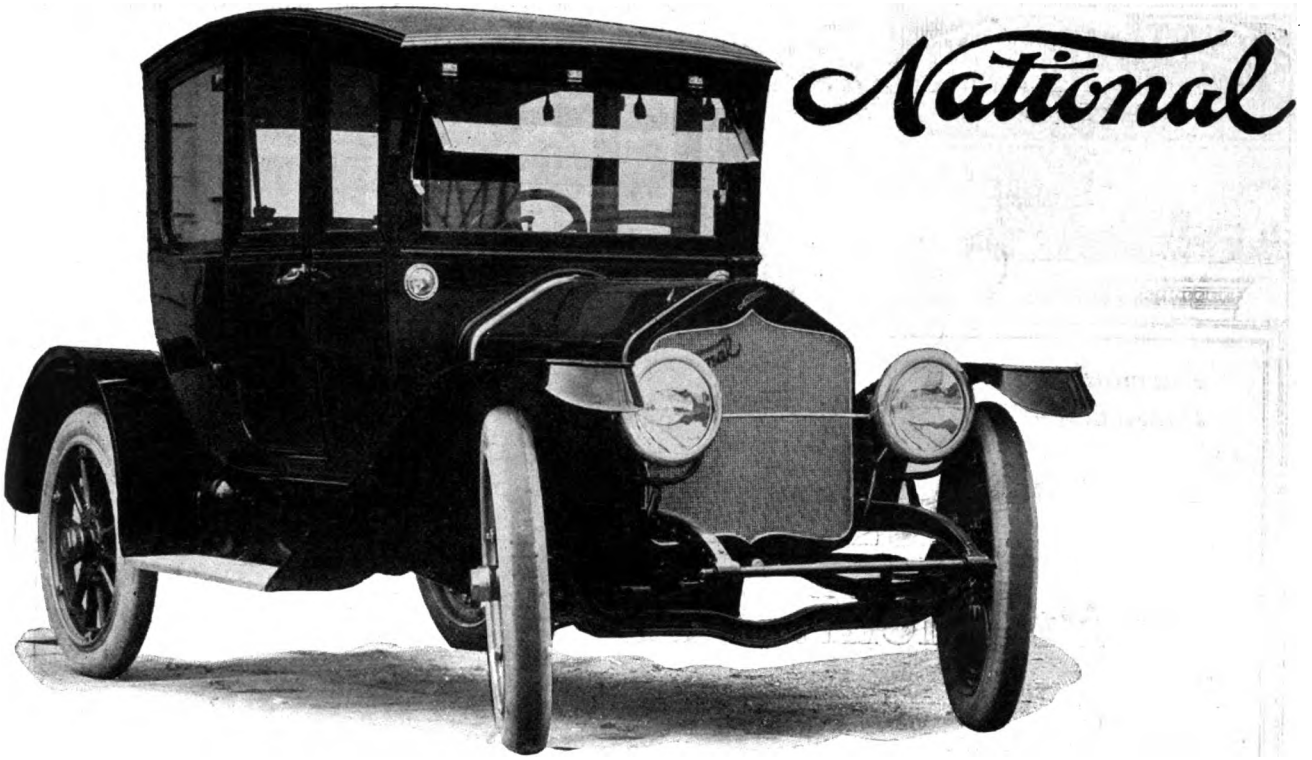
1,056,292. Power Transmission Mechanism. David Nettenstrom, Chicago, Ill., assignor of one-half to Charles H. Elder, Chicago, Ill. Filed Apr. 3, 1911. Serial No. 618,678. (Combination of friction and gear drive.) 3 claims.

1,056,294. Vehicle Wheel and Tire Member Therefor. Frank W. Ofeldt, Hoboken, N. J. Filed Dec. 26, 1911. Serial No. 667,930. (Cross bars of stranded cable on tire.) 7 claims.

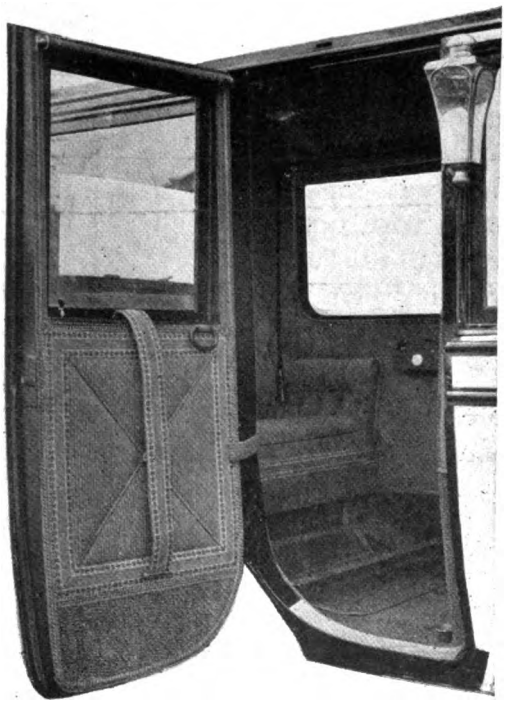
1,056,418. Engine Starter. Percy W. Hodgkinson, Rochester, N. Y., assignor of one-half to Jacob C. Lombard, Rochester, N. Y. Filed Apr. 8, 1912. Serial No. 689,431. (Fluid pressure starter.) 4 claims.

1,056,510. Gas Engine. Edward Pyle Dawson, Butte, Mont. Filed May 9, 1907. Serial No. 372,810. (Regenerator for recovering heat of exhaust gases.) 9 claims.

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Now Is The Time To Order Your Closed Car For Fall And Winter



OUR wide range of exclusive styles gives you an individual closed car—made to order, as it were.

TRUE artists have produced rare beauty and convenience, accompanied by luxurious comfort for our discriminating patrons.

TO the National car's heritage of flexible power, noiseless operation, and reliable performance is added an opulence of refinement and a wealth of beauty. The control of our closed cars is simplicity itself.

EVERY one of our closed cars is so perfectly complete in every detail that to attempt to mention them separately detracts from their harmonious effect produced for your warm, restful motoring.

IT costs you no more to ride in the National's atmosphere of supreme comfort and enjoyment—don't delay. Order now and be sure that your Coupe or Limousine will be ready for you by the first cold wave. Let us send you complete information. Simply address National Motor Vehicle Company, Dept. 90, Indianapolis, Ind.

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Harmonized Construction

Endorsed on Two Continents

Problem: Fours or Sixes?

¶ Which will YOU sell—fours or sixes? Has it puzzled you to know how to solve this problem? Do your customers look at their money a long time before they buy? Do they want a good looking car, yet durable and economical? Do they want to rush the hills? Pass everything on the road? Quick getaway? Dash and class regardless of cost?

¶ You must please your customer or you don't get the order. Your customer can choose. You *must* choose! So why not reduce your overhead and the chance of losing sales by selling both?

¶ Pathfinder Fours and Sixes settle your problem. The Four is economical of gasoline and capable of long and useful service, as proved by its five transcontinental journeys. The Six will carry any lover of power off his feet. Its sensational streamline body and speedy, powerful appearance will make it the *"Master of the Road."* Write us the situation with you. Have you settled your problem? Get a full description of the Pathfinder cars, with an instructive outline of the "selling plan." Write your name on the margin.

THE MOTOR CAR MFG. COMPANY

1138 DIVISION STREET INDIANAPOLIS, U. S. A.

Write your name on the margin

Get new 1914 literature

Master of the Road

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A Continued Story
Chapter 6

The End

WOW!
It's a Mighty Good Joke

I found another old geezer who thought as I did about hand cranking, and unloaded on him.

Oh yes, my new car has the Electric Cranker, and gee, what beautiful lights.

Lord! It's a pleasure to sit in the seat and let machinery do the work—and I can wear good clothes and look like a human being now, too.

Don't have to remember a blasted thing about Starting either, except to push the button. What a think-tank that dinky little cranking machine must have, but it's my private opinion that the real heart of the whole contrivance is that little LBA Battery back there on the running board.

LBA
Storage Battery

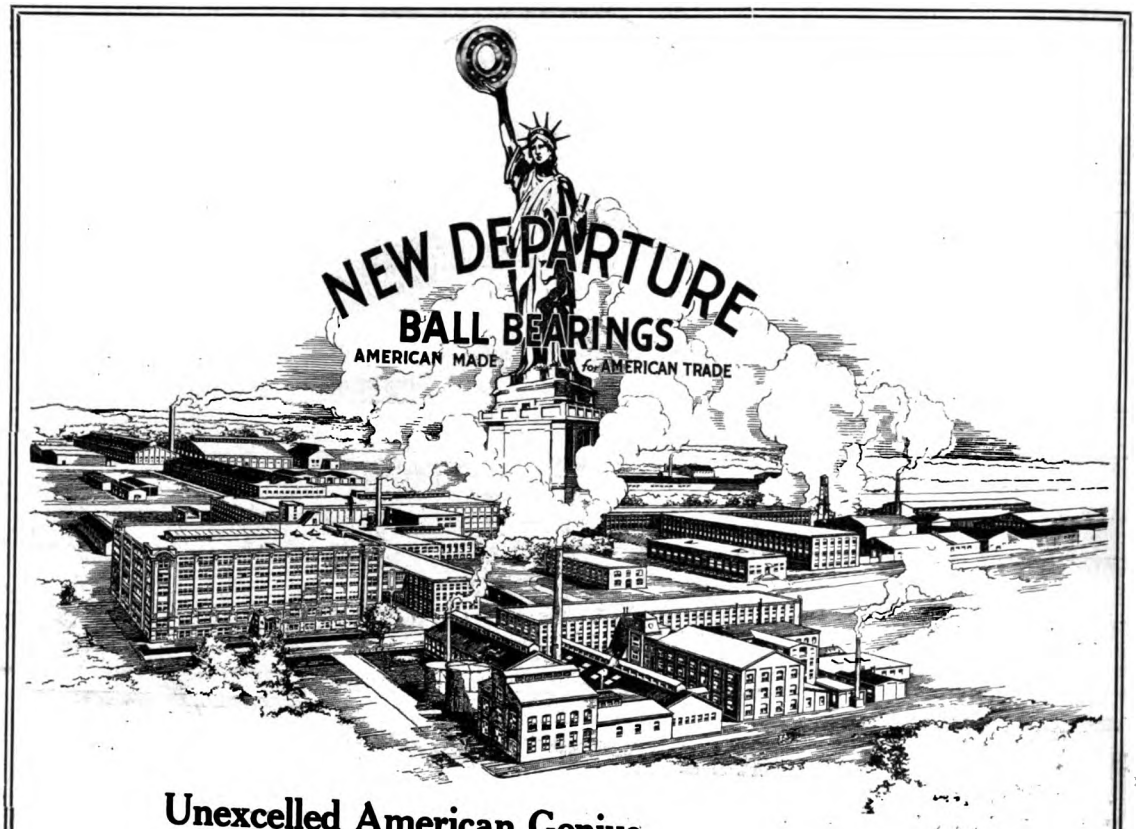
Write us for full information

Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Unexcelled American Genius
Unexcelled American Skill
Unexcelled American Manufacturing Processes

have produced the Unexcelled, American-made, New Departure ball bearing — the bearing that has proved its superiority by actual service in 80 per cent. of American-made motor cars.

Three Types:

Double Row — A two-purpose bearing of maximum capacity for both radial and thrust loads.

Single Row — For radial loads only. An improved separator is an advantageous feature.

Radax — High grade cup-and-cone type bearing for sustaining radial loads and one-direction thrusts.

Descriptive catalog will be sent on request.

Engineering consultation service at your command. Send us your blueprints, speed and load data and we will tell you what size and type of bearing will best do your work with greatest efficiency and least friction and wear.

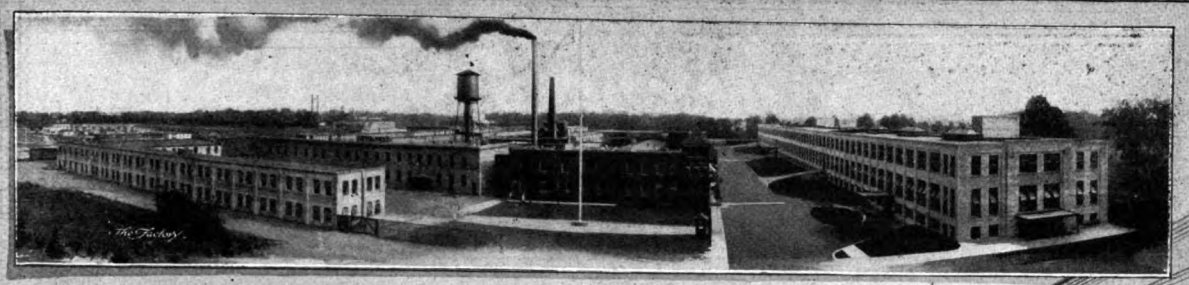
"Elimination of Friction" brochure, now in third edition, discusses the relative merits of balls and rollers in bearing work. A copy will be sent you free on request.

The New Departure Mfg. Co.
Bristol, Conn.
WESTERN BRANCH: 1016-17 Ford Bldg, Detroit, Mich.

"New Departure Ball Bearing Manual" full of information for the garage man and dealer, just off the press. The only book of its kind. Ask us for it.

Special data sheets on New Departure Self Aligning Shaft Hangings and use of New Departure Ball Bearings in machine tools sent free on request. Address New Departure Mfg. Co., Hartford Division, Hartford, Conn. for them.

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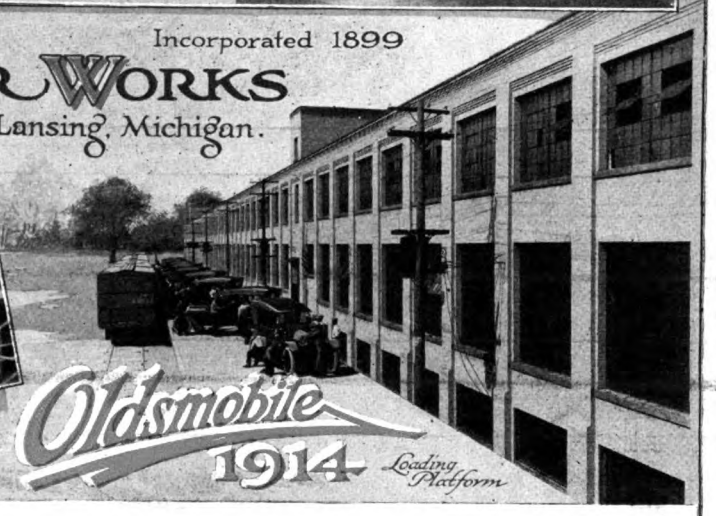


Established 1880 Incorporated 1899

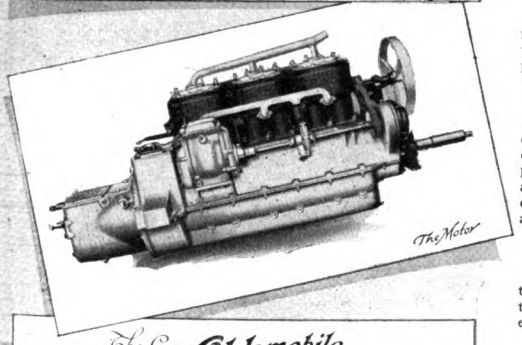
OLDS MOTOR WORKS

Lansing, Michigan.











Four- or Five-Passenger Phaeton, Touring Body Type, $2975. Seven-Passenger Touring Body, $175 Extra. Limousine, $4300

$2975 For a Six Cylinder OLDSMOBILE $2975

Lower in price, and even higher in quality than any of its predecessors—the Model 54—1914 Oldsmobile is creating more concrete evidence of live dealers interest than any other high grade six on the market.

The Price

$2975 practically eliminates competition with dealers handling cars priced from $4000 to $5000—for the Oldsmobile is as good as any of these. The lines of this car are of distinctive Oldsmobile design—a standard which has led all competition, whatever the price.

We Are Six Cylinder Pioneers

Oldsmobile pioneered the six cylinder motor, and it is unnecessary to dwell on the value of the years of ripe experience in the manufacture of six cylinder cars—which is back of Model 54. The Oldsmobile unit power plant 3 point suspensions (bore 4¼, stroke 5¼) is a wonderful piece of machinery. In performance and appearance it meets every and all requirements, and astonishes the experienced motorist with its marvelous flexibility and power. Words cannot adequately portray its many good qualifications.

Matters of Comfort, Utility and Refinement

We learned how to build comfort into the Oldsmobile in the early days of the industry. If we knew of any better equipment or little matters of refinement than are on the Model 54 we would be the first to install them: But we have put everything into this car that spells utility, comfort and refinement.

Prompt Deliveries

Never in the history of this Company have we been so well prepared to take care of our dealers by prompt shipment of cars as ordered. We began the delivery of our new models August first, and each day sees the regular quota of cars coming through the factory, tested and inspected down to the minutest detail, on schedule time. You can absolutely count on all delivery promises being adhered to rigorously.

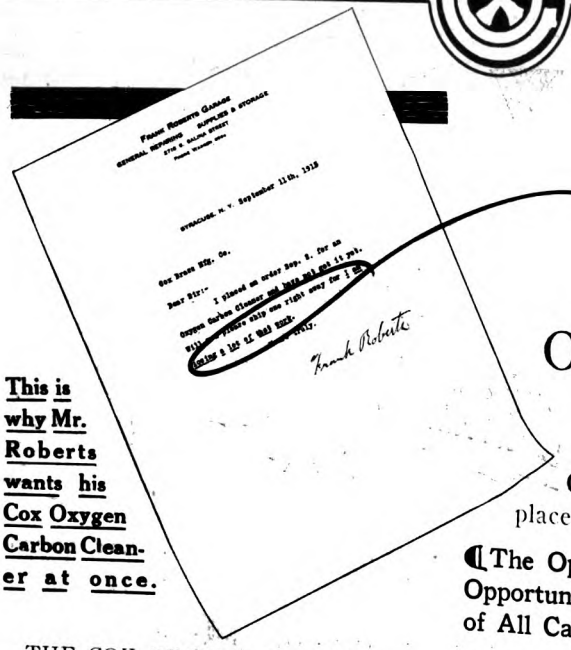
Write Us at Once

In a short while, orders for all cars available for the coming season will be closed, and we shall be unable to go beyond this point. We urge, therefore, that if you wish to sell a car that measures up to the highest standards of quality, workmanship and design, you write us at once, letting us know your prospects, size of territory desired, and your facilities for properly representing the Oldsmobile line.

OLDS MOTOR WORKS **Lansing, Michigan**

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COX OXYGEN CARBON CLEANER



This is why Mr. Roberts wants his Cox Oxygen Carbon Cleaner at once.

How Much Are YOU Losing?

OPPORTUNITY knocks once at every man's door.

¶ The opportunity offered by your using a **Cox Oxygen Carbon Cleaner** will continue to apply for its place in your garage or repair shop, but

¶ **The Opportunity for the Best Profits, the Opportunity to Get the Bulk and the Cream of All Carbon Cleaning Work in Your City;**

¶ **The Opportunity of Making More Than the Investment in a Day;**

¶ **The Opportunity of Making $2 Earn from $30 to $35 is Sure and Safe** to the man who is shrewd enough to grasp it first and get the start on others.

THE COX OXYGEN CLEANER is a device that makes possible the only perfect cleaning out of carbon from the cylinders of a gas engine. No method other than burning it out with oxygen even compares with the results of this latest accepted method.

IT COSTS but $25 and is guaranteed absolutely not to harm any motor.

OXYGEN costs $3 per tank full—you do not buy the tanks, they are loaned to you and you are charged for refills at the rate of $2 per tank.

EACH TANK contains enough oxygen to clean from 35 to 40 cylinders and any $15 per week man or boy easily cleans a cylinder in from 6 to 10 minutes through any of the cylinder openings.

$1 PER CYLINDER is the universal charge for this work, consequently every $2 spent for oxygen nets you from $30 to $35.

¶ The man who gets this business coming is bound to hold the bulk of it by reason of doing better work and by not holding up customers' cars.

¶ We cannot urge too much the advantage of being the first in your town or city to take advantage of this opportunity. $2 spent makes $30.

¶ Write or wire for more particulars.



Cox Brass Mfg. Co., Albany, N. Y.

1777 Broadway, New York City

870 Woodward Ave., Detroit, Michigan

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INSIST UPON THE

RED TAG



ACCEPT NO SUBSTITUTE FOR PLATINUM POINTED

Mosler Spit Fire Plugs

Genuine Platinum Point
Guaranteed Forever

Energetic Ignition Greater Power

A. R. MOSLER & CO. P.O. Box "M," MT. VERNON, N. Y.

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A New Era—A New Opportunity

Dealers: Are You Alive to the Latest Developments of the Electric Car Business?

Are you one of the dealers who have said, "Some day I'll take on an electric car. But not now; I'm not ready for it?"

Or do you, perhaps, belong to those who have thought, "It's not worth while handling electrics; I can't sell enough of them?"

THE Detroit ELECTRIC

To both classes we reply, "Now is the time to take on an electric. For a new era has just dawned in the electric car business—an era of large production, of lower prices, of wider use for electric cars, of increased business for dealers."

Among the makers of electric cars we are the first to reach a point long since attained by some gasoline car builders—a point where our production is large enough to permit the marketing of a car of superlative quality at a medium price.

How We Bring Prices Down

Electric car prices in the past have been too high. Dealers have said it; manufacturers have known it. But no manufacturer was producing a big enough output to bring down the price.

At last we have done this. Where the average electric car builder is turning out 500 cars per year, we shall this season build from 1,800 to 2,000. Our volume—already more than twice that of any other electric car builder—has enabled us to adopt advanced manufacturing methods and to install high grade equipment impossible to the maker with smaller output.

Thus we are able to offer, for the 1914 season, a selling proposition absolutely unequalled in the motor car industry today.

Opportunity's Second Call

Do you recall the early days of the gasoline car business? Perhaps at that time you had an opportunity to take on one of the cars of medium price and large production—a car that since has earned thousands of dollars for the prudent dealer who took the agency. Have you ever been sorry you were not handling that car? Have you ever regretted that you did not take it on when you had the chance?

Today you stand in a similar position with reference to the electric car business. The electric is just coming into its own. Modern improvements, in which the Detroit Electric has always led, have made it a car for town and country, for men and women, for business as well as pleasure.

Dependable, safe, clean, economical to operate, it is daily appealing to a wider and wider circle of buyers. And now, with the substantial price reductions offered by the Detroit Electric, the market is greatly extended, the sales opportunities tremendously enlarged.

A Wonderful Line

Our 1914 cars, though moderate-priced, offer a combination of desirable features never before presented in an electric car—at any price. Our line is exceptionally comprehensive. Two chassis models are offered—a worm gear type and a bevel gear type. Seven different body styles are furnished. Choice is offered of front seat drive, rear seat drive, or Detroit Duplex drive, operating from either seat.

The striking features of our 1914 models include Detroit Electric clear vision bodies, Hanlon patented double glass rain vision window, full aluminum body panels and roof, full skirted aluminum oval crowned fenders, electric hand brake, Detroit Electric Shaft Drive (chainless), extra large tires, increased battery capacity, superfine upholstery, Warner speedometer, high grade clock, and many minor details in construction and equipment.

Now Is the Time to Act

Here is a real opportunity to repeat the success of the gasoline car industry. Here is a chance to get into a branch of the motor car business which presents the greatest possibilities of growth and profit.

If you are a gasoline car dealer and want to add to your sales and profits, write us now and find out if your territory is still open. If you are already an electric car dealer and want to increase your business, to make sales faster and easier, get in touch with us.

And remember—that in taking on the Detroit Electric agency you are tying up with the largest makers of electric pleasure vehicles in the world, with a solid, substantial company, amply financed and soundly managed.

Literature and dealer's proposition on request.



Model 48 Detroit Duplex Drive

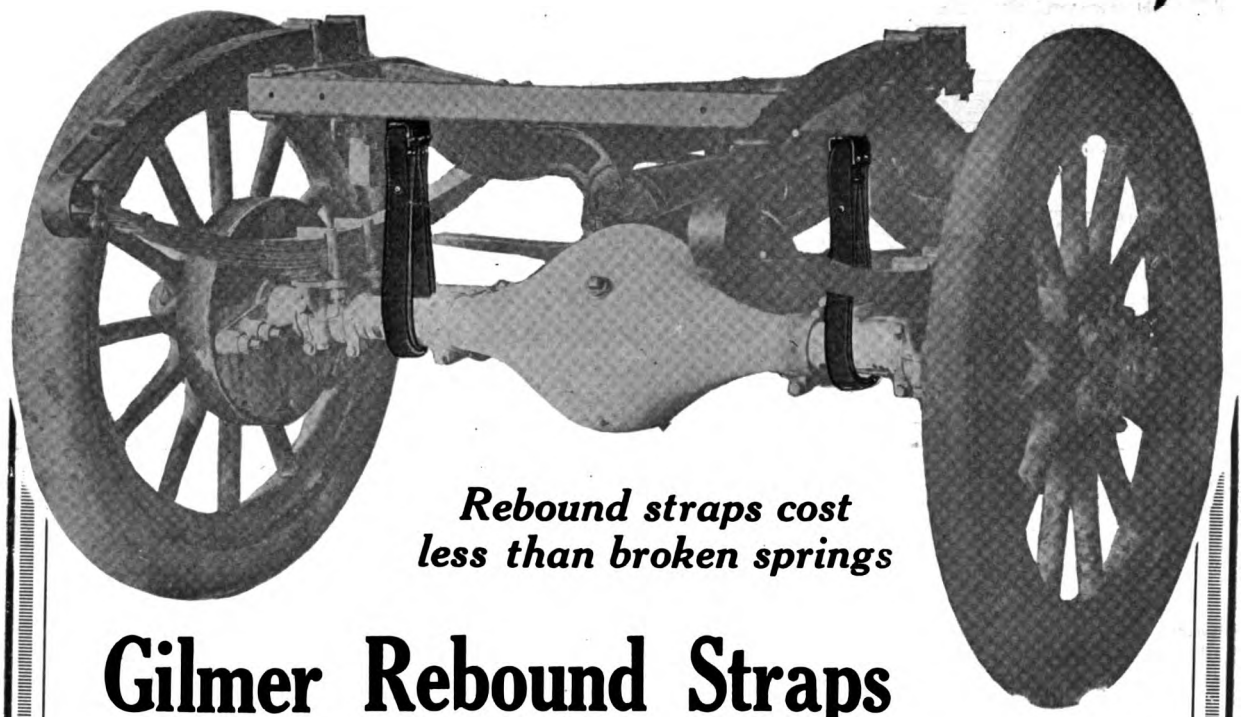
With Worm Gear Axle		With Bevel Gear Axle	
5-pass. Brougham, Detroit Duplex Drive	$3000	5-pass. Brougham, Front Seat Drive..	$3000
4-pass. Brougham, Rear Seat Drive.....	2500	4-pass. Brougham, Rear Seat Drive...	2550
Gentlemen's Roadster	2500	Victoria	2300

F. O. B. Detroit.

Anderson Electric Car Company
DETROIT, MICHIGAN

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Gilmer Rebound Strap



Rebound straps cost less than broken springs

Gilmer Rebound Straps

stop a car's rebound before it starts. They stop all accidents and all damage resulting from broken springs before such a contingency can happen.

The downward thrust of a car's body does not hurt the springs—they are built to take care of just such work. A spring which will give comfortable riding qualities to a car cannot be stiff enough to take care of a car's rebound caused by riding over a bump or a stretch of rough going. It is the rebound which breaks the springs and it is the rebound that Gilmer Rebound Straps prevent before it starts.

Regardless of the kind of shock absorber a car may be equipped with, it needs a set of Gilmer Rebound Straps to preserve the springs.

Every motorist in your territory is a prospective customer for a set of Gilmer Straps. Several manufacturers—among them Packard, Cadillac, Premier, Hudson, Hupmobile, Chevrolet, Cartercar—make Gilmer Rebound Straps part of their chassis equipment.

Each strap is guaranteed for a year. They are made of the best grade of Long Fibre Cotton yarn, water-proofed and weather-proofed, and each strap is tested to resist a strain of 5,000 pounds.

Send for our dealers' proposition. You can insure your customers against a nasty and expensive repair and at the same time earn a nice profit.

L. H. Gilmer Company, **52 N. Seventh Street Philadelphia, Pa.**

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Don't Ask a Car Owner to Pump Tires by Hand!

Pumping tires by hand is the cause of more than half the "tire troubles." The physical energy required, the loss of time, and often the loss of temper are big factors. Make the engine fill the tires by installing a

Four Cylinder KELLOGG Tire Pump

Adopted as standard equipment on the better cars and highly recommended as special equipment on many others. Manufacturers and dealers should investigate this tire pump even before electric lighting systems, automatic gear shifts, etc.



Car owners want the KELLOGG PUMP because they need it. Price is moderate, and attachments are ready for practically every important model now in use.

Send for our book, "Air on Tap."

The Makers of These High Grade Cars Use and Endorse The Standard Kellogg Tire Pump:

Austin Automobile Co.
Chalmers Motor Co.
Dayton Motor Co.
Edwards-Knight Motor Car Co.
Haynes Motor Car Co.
McFarlan Motor Car Co.
Oakland Motor Car Co.
Packard Motor Car Co.
Palmer-Singer Mfg. Co.
Peerless Motor Car Co.
Staver Carriage Co.
Stevens-Duryea Co.
Winton Motor Car Co.

Attachments Supplied for Attaching The Standard Kellogg Tire Pump to the Following Makes:

Abbott-Detroit 1912-'13, 44-50
American 1912-'13
Apperson 1912
Bergdoll "30"
Buick 1914 models in preparation
Cadillac 1911-'12-'13-'14
Chalmers "30" (36 and 6 cyl. attachment from Chalmers factory)
Cole 1912-'13, "40," "50," "60"
F. I. A. T. "54," "55," "56"
Flanders "6"
Haynes 1913, "23," "24"
Hudson "33," "37," "54," and 1914
Imperial 1914
Jackson 1913
Kissell 1913, 4 cyl. and 6 cyl.
Locomobile, L. L. M. R
Lozier 1911-'12-'13-'14—all models
Marmon 1912
Oakland 1913—all models
Packard "30 No. 1248," "1338," "1348," "238"
Paige-Detroit 1913
Pierce-Arrow (all models 1907 to date)
Selden (all models)
Simplex "38," "50"
Speedwell 1914
Stearns 1913 and 1914, 4 and 6 cyl. Knight
Stevens-Duryea "A A," "X," "Y"
Studebaker "6," 1914
Warren-Detroit 1913
Winton "6" (all models, 1910 to date)

Kellogg Manufacturing Co.

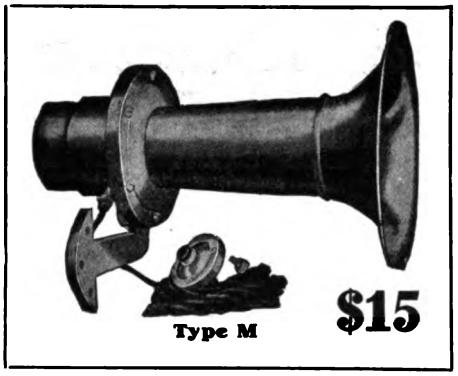
Main and Circle Streets
Rochester, N. Y.

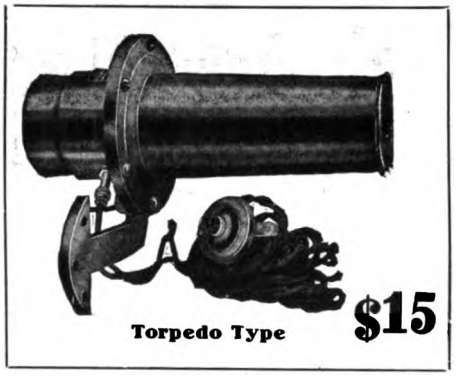
NEW YORK
1733 Broadway

SAN FRANCISCO
444 Market St.

CHICAGO
1112 S. Michigan Ave.

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Type M $15


Torpedo Type $15

Prices Reduced On Newtone Horns

Quantity production and most advanced manufacturing methods enables us to lower cost 25%.

TO TAKE EFFECT OCTOBER 1st, 1913 { **Type M, $15** **"Torpedo," $15** **Type N, $15**

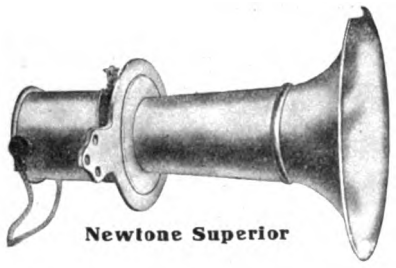
During the last three years the demand and production of Newtone Horns has increased nearly 800 per cent.

Average Weekly Production

In 1911 we produced an average of 350 Newtones per week. In 1912, 900 and in 1913---so far---an average of 2,765 per week.

To meet the tremendous demand for these horns we have added new floors, new machinery and a greatly increased force of skilled mechanics, so that we have doubled our present capacity, thereby insuring absolute satisfaction and prompt delivery on future orders.

We invite criticism and challenge competition.


Newtone Superior

NEWTONE Superior

$10 As Heretofore

The Most "Talked Of" Motor Driven Horn

The Newest Newtone is in every essential the Greatest Newtone we have ever produced.

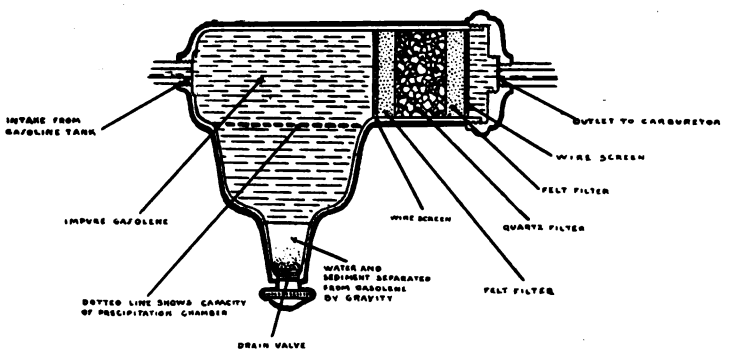
Write for Our Catalog Today

Automobile Supply Manufacturing Company

220 Taaffe Place **BROOKLYN, N. Y.**

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The Ellis Gasolene Purifier



THE Ellis Gasolene Purifier consists of a series of screens and filters which intercept every particle of dirt, grit and sediment common in commercial gasolene, any of which cause trouble the minute they get into a carburetor.

Water, too, is always present in gasolene and no amount of screening, filtering or chamoising can keep it from getting into the carburetor and causing trouble.

The Ellis Gasolene Purifier traps every drop of water by gravity and retains it in a precipitation chamber, from which it can be drained at any time.

Remember this—a carburetor will work right if given a chance, provided it does not have to vaporize anything except pure gasolene.

Study the diagram of the Ellis—the most minute particle of sediment cannot get by its filters. Water, which is heavier than gasolene, sinks to the bottom of the trap provided to catch it.

Fine as they are, the screens and filters of the Ellis do not retard the flow of fuel to the carburetor—they simply and effectively stop anything besides pure gasolene getting into the carburetor. ***The Ellis Gasolene Purifier insures against carburetor trouble by taking out of the fuel all causes of carburetor trouble.*** By striking at the cause it remedies the evil.

Send for an Ellis for your demonstrator. The results you will get will convince you how you can relieve the cars you sell of all carburetor trouble. It costs $3.50 and can be put on inside half an hour. The Ellis requires no other attention than draining once a week or so. When ordering, state diameter of fuel feed pipe.

The National Sales Company

45 Milk Street **Boston, Mass.**



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Is Your Car Ignition Insured

The achievements of America's greatest automobile engineers were made practical only by their selection of the

Bosch Magneto

These Six Cylinder Productions Use the Bosch Magneto as Standard:

Packard Six
Peerless Six
Locomobile Six
Stevens-Duryea Six
Abbott-Detroit Six
Knox Six
Pope-Hartford Six
Garford Six
Pierce Arrow Six
Winton Six
Fiat Six
Chalmers Six
White Six
Lozier Six
Chandler Six
Stearns Six
Marmon Six

And many others

Only a perfect magneto can supply suitable ignition to meet the peculiar characteristics found in six cylinder engines. BOSCH MAGNETOS are therefore best for all engines. Have yours Bosch-Equipt and be satisfied.

Bosch Magneto and Plug Literature on Request

BOSCH MAGNETO CO., 224 W. 46th St., New York

Fully equipped stations in all important centers

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Lancia

AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it ***is*** limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

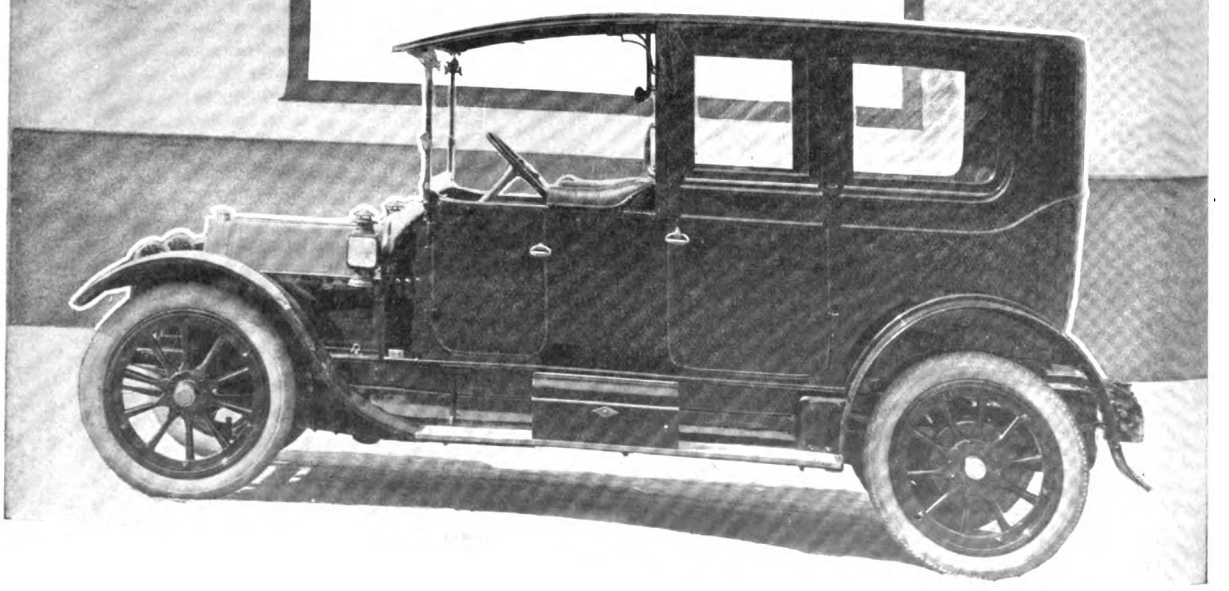
Lancia dealers use these arguments as the basis for selling arguments.

Car wise buyers who want European automobiles are quick to grasp and act upon them.

There is some choice territory awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

ADAMS-LANCIA COMPANY
238 West 58th Street New York City

DEALERS WANTED



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Hyatt Roller Bearings carry the load on a line contact instead of on one point as ball bearings do.

A line is composed of an infinite number of points placed in a row.

Just think of the saving in duty on the bearing when the load is distributed along this line instead of being concentrated on a single point.

"Hyatt Quiet Bearings"



HYATT ROLLER BEARING CO.
DETROIT CHICAGO
NEWARK, N.J.

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Something more about—

INVAD



INVADER OIL **will** leave a carbon deposit. So will every other oil.

INVADER OIL **will** smoke when it burns. So will every other oil.

When INVADER OIL is used it **may be** necessary to grind valves. Such certainly would be the case with every other oil.

A motor using INVADER OIL **can** overheat. So it can when any other oil is used.

A machine exclusively lubricated with INVADER OIL **will** eventually wear out. This would also be the case no matter what oil was used.

FACTORIES:
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON.....512 Kenois Bldg., 11th and G Sts., N. W.
PHILADELPHIA.....113 Arch St.

INVADER

Lessees of Ch F.

Main Office, 81 Broa St

New York C Bra

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ER OIL

INVADER OIL is **not** a perfect lubricant, neither is any other oil. There is no such thing.

INVADER OIL, however, is chemically superior to all other oils. It will deposit **less** carbon, make **less** smoke, mean **less** grinding of valves, make a motor **less liable** to overheat, and will cause the machine using it to last **longer** mechanically than would be the case were **any** other oil used.



Remember that the superiority which is indicated by its better tests is a superiority which cannot be contradicted. INVADER OIL is better because its tests are better. There is no way of avoiding this fact.

OIL COMPANY

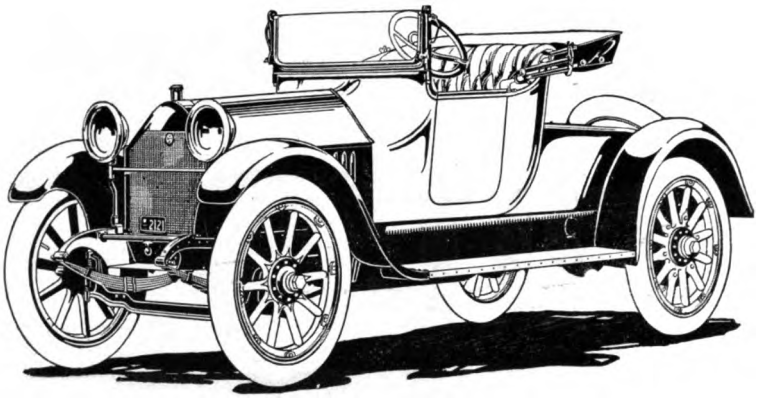
. Kellom & Co.
treet, New York City
ranch, 1906 Broadway

TERRITORIAL AGENTS

W. D. Newerf Rubber Co. (Pacific Coast Distributors) 949 S. Main St., Los Angeles, Cal. 589 Mission St., San Francisco, Cal.
Boyer-Campbell Co. ..... Detroit, Mich.
Beck & Corbitt Iron Co. ..... St. Louis, Mo.
Motor Car Supply Co. ..... Chicago, Ill.
Lee Hardware Co. ..... Salina, Kan.
American Lubricating & Supply Co., Kansas City, Mo.
James Bailey Company ..... Portland, Me.

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This monogram stands for all you can ask in a motor car



$2175
Fully Equipped
F. o. b. Detroit

A Motor That Can't Be Stalled

Here's a New Factor in Safety— An Additional Source of Comfort

Any motor ***might*** lose its spark unexpectedly; the gas ***might*** be cut off accidentally. Think of the possibilities if this should occur on a crossing.

The non-stallable motor of the New Chalmers "Six" protects you in such a case. The electric starter speeds up the motor even should the gas be cut off or the spark interrupted. It keeps it running in every emergency.

It prevents "going dead" in crowded traffic; keeps it from stalling under sudden overload.

A Guardsman Always on Duty

The starter is always ready. It comes into action automatically with the release of the clutch whenever the engine speed drops to a certain point. No need to give it a thought. Throw on the switch at the outset —that's all.

This non-stallable feature of the New "Six" gives you a sensation of security that doubles your motoring pleasure.

Where the New "Six" is Supreme

No honest maker claims that a "Six" will get away any quicker—run any faster or climb any steeper hills, than a "Four" of equal weight and horsepower.

But Oh! how much more smoothly, silently and easily it does it. The six cylinders give a continuous stream of power; there's no interval between explosions; the impulses are utterly imperceptible.

The entire absence of vibration nearly doubles the life of the car and the comfort of the passengers. You can tour day after day in the New "Six" with the comfort of your easy chair.

Ride in it once and you'll be forever spoiled for any "Four."

Here's Flexibility No "Four" Can Equal

Take the wheel of the New Chalmers "Six." Push the switch of the electric starter and let in the clutch.

Notice how quietly—how smoothly it moves away. See how easily and how quickly it mounts to 20—30—40 miles an hour or throttles down to two—and then off again, without shifting gears.

That's flexibility. And it's all in the motor itself; gear shifting is seldom needed. Any auxiliary gear mechanism to secure flexibility would be merely superfluous weight.

Let the Car Prove It

Come and see this wonderful "Six." Its classic beauty—its harmony of outline will fascinate you.

Let us take you for a ride in it. Its mystic silence —its velvety smoothness—its supple power will give you a new sensation in motoring pleasure—the thrill of speed with the luxury of rest.

Chalmers Motor Company, Detroit

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Proving up the Differential Carrier of a Timken-Detroit Rear Axle by means of the Carrier Test Gauge. At the right is given the reason for this important check on the accuracy of many operations

The Teeth that Always Fit

Part IV Sequel to The Gear with the Polished Teeth

TIMKEN-DETROIT · AXLES ·

THE driving-gears are finished—ground to the perfect accuracy that is obtainable only by the exclusive method of Timken Gear-grinding.

The differential carrier is finished, too, It is ready to receive the polished gears and to be bolted to the axle-housing.

But one thing remains—we must *know* that the work has been done right: and so we come to the last chapter in the story of "The Teeth That Always Fit."

A Gauge That Proves Many Things

The carrier is turned up on its smaller end and slipped over an upright shaft that forms part of the test gauge. On this shaft are two circular discs that fit into the holes reamed out for the pinion aud pinion-shaft bearings. This fixes the perpendicular axis—the position of the pinion-shaft.

Now discs are fitted into the openings for the differential bearings, and through them is slipped, horizontally, another shaft—which you see plainly in the picture. If the holes for the differential bearings are not perfectly in line with each other the shaft can not pass through both.

But it must also be in a plane at right angles to the upright passing through the pinion bearings. So the operator takes the gauge, which you see in his right hand, and slips it through a hole in the horizontal shaft and down into another hole in the upright shaft.

It goes in; the axis of the drive shafts is in the right plane!

But is it in the right position in that plane? The gauge will tell us. It has an arm that comes down over the shaft—you can see it. He pulls it up, and turns it around so that the arm comes down on the other side of the shaft—next his body. A very slight variation of either of the differential bearing cups from its true position can thus be instantly detected, as the arm will be loose on one side, too tight on the other.

Lastly, the distance is measured from the center of the horizontal shaft, at each end, to the rear face of the carrier (in which you see holes bored for the bolts that fasten it to the axle housing.)

The test is complete. *If the carrier fails to pass, it is rejected without mercy.*

FOR on the correct relation of those "four holes", and that rear face, depend the perfect meshing and quiet running of "the teeth that always fit" as long as they are in the car.

To throughly appreciate the importance of this test in long wear, full transmission of power, quietness, and saving of gasoline, you should read the preceeding chapters in this story. The complete series will be sent you free, postpaid, at your request.

The Timken Detroit Axle Co.
Detroit, Michigan

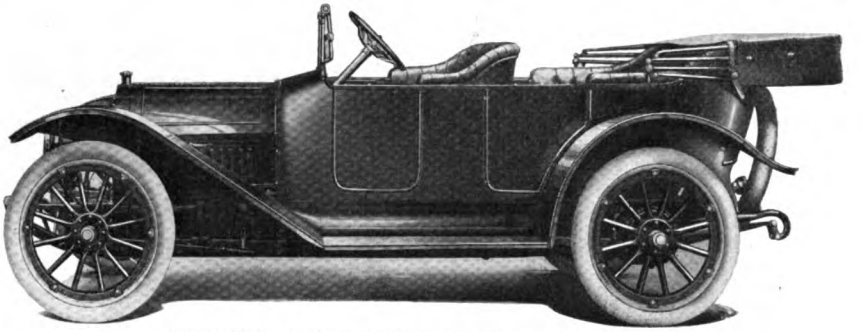
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Regal

Sell Regal Cars This Year!

Every Demanded Feature-Popular Prices



Model "T"—5 Passenger Underslung Touring Car—$1125

The New Series of Regal cars offers the very latest features ---just what automobile buyers insist upon---at prices within reach of thousands. These two facts give these new cars an unprecedented selling power.

EVERY present Regal dealer believes this will be the **greatest profit-year** in his business history. We are certain of it. We want to convince you. **The first reason is:**

Regal Cars

The New Series consists of four models—three of them built on the proven and famous Regal Underslung construction. This method of building—the frame below the axles—gives long, low body lines, insures against "turning turtle" or skidding and saves tires and gasoline. The other model is a big, beautiful, luxurious overhung car. **The second reason is:**

Regal Advancements

We have incorporated the following demanded features as standard equipment on all Regal cars:

Electric starter and lighter. Electric headlights, with dimming attachment. Left-hand drive and center control. Long sweeping body lines enhanced by graceful cowl dash. Switch for starter, lighting switches and speedometer on instrument board. Special attachable curtains. Rain vision and ventilating windshield. Demountable rims. Tire irons, etc. **Add to this a third reason:**

Regal Prices

A dealer **must** sell a **low-priced car** if he expects to make money. Around **$1000** is the **big market** this year. But you **can't** afford to handle a poorly built car no matter what the price is. We **offer you** the very lowest, consistent prices and cars that can't be built better—that have always **stood up** and always satisfied their owners. **And now the last reason is:**

Regal Organization

Our tremendous growth during the past seven years has been due to the merits and prices of our cars, combined with a careful, sound business policy. We are **permanent** and **financially prosperous.** Our vast factory facilities insure speedy deliveries and efficient factory service.

These are some of the big arguments why you should handle Regal cars this year and get **your share** of the money Regal dealers will make. Now read carefully our specifications.

Specifications---Model "T"

Wheel base, 108 inches. Motor, four-cylinder cast en bloc; bore, 3¾ inches; stroke, 4½ inches. Dual ignition. Cooling, thermo-syphon with fan. Selective type sliding gear transmission, three speeds forward and reverse. Leather faced cone clutch. Steering, left hand with center control. Tires, 32x3½ inches. Demountable rims. Equipment includes Rushmore electric starter and lighter, nickel trimmings, electric head and tail lamps with dimming attachment, electric horn, extra demountable rim, tire irons, mohair top, special adjustable curtains, top boot, ventilating rain vision windshield, speedometer, foot throttle and muffler cutout. Color, dark blue with light blue striping. **Price, completely equipped, $1125, f. o. b. Detroit.**

Regal Motor Car Company

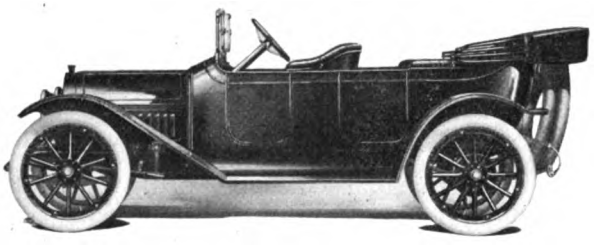
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Regal

Electric Starter and Lighter—Left Hand Drive-Center Control

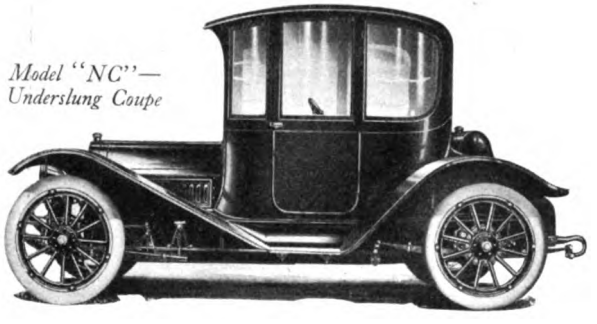
Specifications---Model "N"

Wheel base, 108 inches. Motor, four-cylinder cast en bloc; bore 3¾ inches, stroke 4½ inches. Dual ignition. Thermo-syphon cooling with fan. Cone clutch with leather face. Transmission, selective sliding gear, three speeds forward and reverse. Steering, left hand with center control. Tires, 32x3½ inches. Demountable rims. Equipment includes Rushmore electric starter and lighter, nickel trimmings, electric head and tail lamps with dimming attachment, electric horn, extra demountable rim, tire irons, mohair top, top boot, windshield, speedometer, foot throttle and Muffler cutout. Color, dark blue with light blue striping. **Price, completely equipped, $1125, f. o. b. Detroit.**



Model "N"—Underslung Roadster

Model "NC"—Underslung Coupe

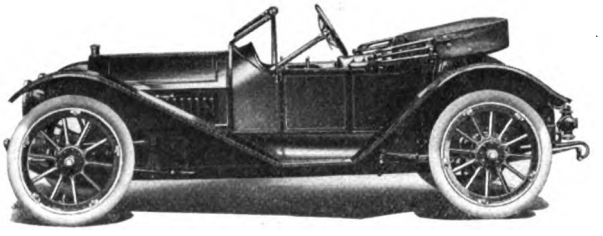


Specifications---Model "NC"

Wheel base, 108 inches. Motor, four-cylinder cast en bloc; bore, 3¾ inches; stroke, 4½ inches. Dual ignition. Cooling, thermo-syphon with fan. Cone clutch with leather face. Selective sliding gear transmission, three speeds forward and reverse. Tires, 33x4 inches. Demountable rims. Left-hand steering, center control. Upholstering, seat and lower part of body buffed leather; upper body and ceiling, blue broadcloth. Equipment includes Rushmore electric starter and lighter, nickel trimmings, electric head and tail lamps with dimming attachment, electric horn, extra demountable rim, tire irons, extra folding seat, speedometer, foot throttle and muffler cutout. Color, dark blue with light blue striping. **Price, completely equipped, $1600, f. o. b. Detroit.**

Specifications---Model "C"

Wheel base, 116 in. Motor, four-cylinder cast en bloc; bore, 4 in.; stroke, 5 in. Dual ignition. Cooling, thermo-syphon with fan. Selective sliding gear transmission, 3 speeds forward and reverse. Cone clutch with leather face. Steering, left hand, center control. Front springs, half elliptic, rear springs, three-quarter elliptic. Tires, 34x4 in. Demountable rims. Equipment includes Rushmore electric starter and lighter, nickel trimming, electric head and tail lamps with dimming attachment, electric horn, extra demountable rim, tire irons, mohair top, special adjustable curtains, top boot, rain vision ventilating windshield, speedometer, foot throttle and muffer cutout. Color, dark blue with light blue striping. **Price, completely equipped, $1350, f. o. b. Detroit.**



Model "C" Overhung Touring Car

We Want the Right Dealer in the Right Place. WRITE TODAY!

We have some unallotted territory that offers exceptional opportunities to the right sort of men. You may be just the kind of man to handle our profitable line in your locality. Our proposition is fair and square. It gives you a good margin of profits. Our cars sell readily. Every Regal dealer is a prosperous business man. Write or wire us today for our New Series literature, and for our dealer's proposition. Address:

263 Piquette Ave., Detroit, Mich.

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Concentration of *Thought* Upon Rim Construction *Only* Has Proven Its Worth

The concerns in this country manufacturing steel rims used on motor vehicles do not exceed twelve in number, and out of this number the Jackson Rim Co. of Jackson, Michigan, is the ONLY one whose product consists of rims EXCLUSIVELY—Consequently we claim a superiority over other producers, because we devote our entire time to "RIM THOUGHT." The men connected with us are trained mechanics—RIM trained—and have spent their time in developing and perfecting machinery that is individually ours. Special treatment of the steel in our rims has brought them to the highest possible standard, to meet the strain and requirements to which rims are subjected. Our new plant is of concrete, steel reinforced and is absolutely fireproof, and this protection should in itself appeal strongly to every manufacturer of Automobiles. Our capacity of 2,000 sets of rims per day is a safeguard in placing your specifications with us.

JACKSON RIM CO., Jackson, Mich.

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We Make *Pneumatic* Tires Only And Therefore Make Them Well

THE SPECIALIST is a leader because he can produce in his particular line *better* than the man of general attainments. We are Specialists in the Manufacture of Pneumatic Tires. For fourteen years, since beginning business, we have made nothing else.

The outcome is what anyone would expect—SUPERIORITY—fairly reflecting such concentrated effort—an exclusive construction, known as Fisk Heavy Car Type, in which are embodied the lessons we have learned.

The *Quality* of our product is backed by integrity that has never been questioned, and an organization which, from the President down to each of the Branch Managers and assistants, is dominated by a spirit which places "the satisfaction of customers," whether dealers or consumers, above all other considerations.

We make Heavy Car Type Fisk Tires in all styles to fit all rims—Plain Tread or the famous Town Car (non-skid) Tread. Write Dept. 23 for Fisk Dealer Proposition.

THE FISK RUBBER COMPANY

Factory and Home Office **Chicopee Falls, Mass.**

The Fisk Rubber Company of N. Y.—Branches

ATLANTA	CHICAGO	FARGO	MILWAUKEE	PITTSBURGH	SEATTLE
BALTIMORE	CINCINNATI	FRESNO	MINNEAPOLIS	PORTLAND	SPRINGFIELD
BOSTON	CLEVELAND	HARTFORD	NEW ORLEANS	PROVIDENCE	ST. LOUIS
BROOKLYN	DETROIT	INDIANAPOLIS	OAKLAND	ROCHESTER	ST. PAUL
BUFFALO	DES MOINES	KANSAS CITY	OMAHA	SACRAMENTO	SYRACUSE
BUTTE	DENVER	LOS ANGELES	PHILADELPHIA	SAN FRANCISCO	WORCESTER
		NEW YORK			

THE FISK COMPANY OF TEXAS—DALLAS, SAN ANTONIO, HOUSTON

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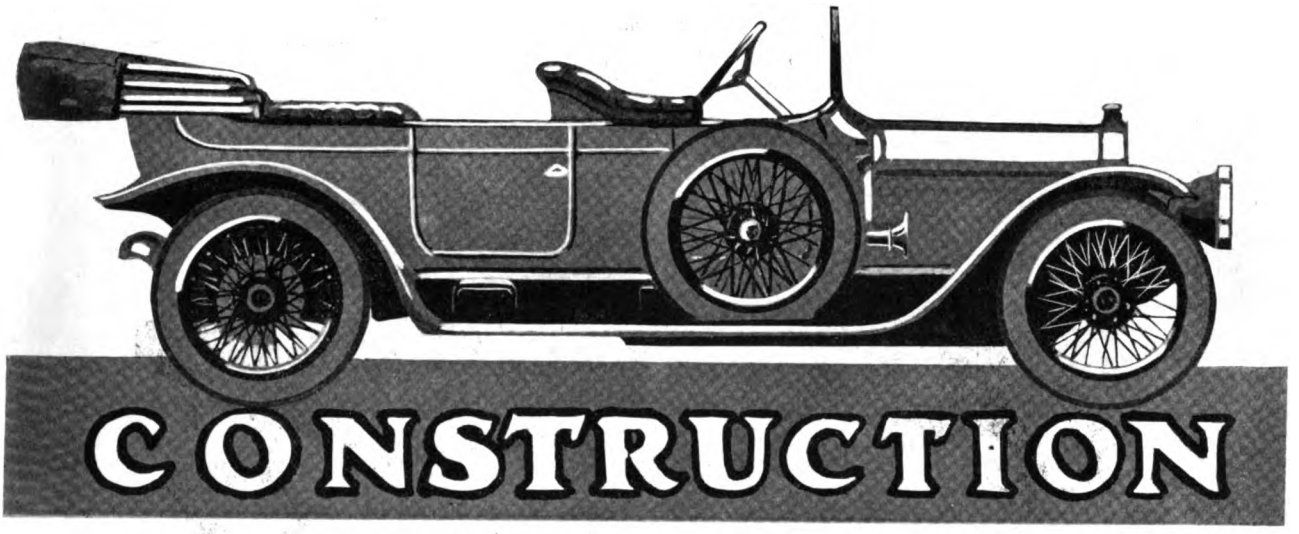
THE tendency toward all-metal construction has become an irresistible movement in all lines of building. Steel is used for the framework of buildings, bridges, etc. It provides protection against fire and elements and makes open, web-like construction possible, at the same time supplying the means of securing flexibility required by any structural work which carries a tremendous load.

In almost every means of transportation, railway coaches, steamships, automobiles, etc., where high speed is required steel construction demonstrates its superiority over wood. While the more compact construction made possible by the use of steel is desirable, its greatest benefit is the factor of safety that accrues.

From an engineer's standpoint the nature and properties of steel open up opportunities for wonderfully practical development in many fields. Think what Brooklyn Bridge would look like if built of wood and you have some conception of how the appearance of an automobile is refined and improved by the adoption of wire wheels. A structure such as the Brooklyn Bridge, which is as safe and efficient now after years and years of constant service, exposed to all kinds of elements, would not carry its own weight were it even possible to build it out of wood. This may give you an idea of the relative strength of steel and wood, and it may also serve to give you an idea of the relative safety of the two kinds of construction.

THE Mc CUE
Buffalo

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CONSTRUCTION

WIRE wheels are the last and most important wood replacement in automobile development, the last step in making the motor car what it should be, a creatue of steel throughout.

McCue Wire Wheels are built along the most modern conception of wire wheel construction. Standard Ⓢ spokes, made by the Standard Co. of Torrington, Conn., are used. With McCue Wire Wheels the weight of the car is suspended equally from all points on the rim and the rim itself, impervious to weather, is light, thus relieving the tire of the extra pound, pound, pound which the heavy wooden rim subjects it to. Steel rims also conduct the molecular and frictional heat away from tires and prolong their life more than fifty per cent.

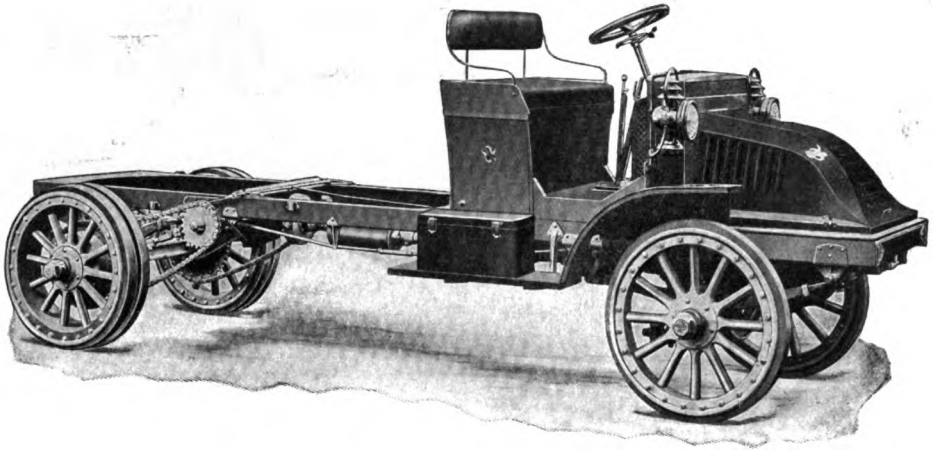
To sum up, steel wire wheels are more economical, resilient, more refined and, best of all, provide a factor of safety in proportion to their strength—seven times that of wooden wheels in their capacity to support loads, and fifteen times the strength of wooden wheels to resist side thrust such as comes from skidding, etc.

The McCue Company is prepared to make delivery according to specification and the quality and performance guaranteed by McCue wheels is so settled that manufacturers now have no further reason to refuse wire wheel equipment whenever ordered. Write us for booklet describing the development of wire wheels, causes which brought about their use, and their superiority when compared with the ordinary artillery type wheel..

COMPANY
New York

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A Time-Tested Truck With a New Name



HORNER

Motor Trucks

One to Five Ton Capacities

Eight months ago we purchased the patents, rights, designs, patterns, etc., of the Grabowsky Power Wagon Company of Detroit, and began the manufacture of the Horner Motor Truck.

Essentially the Horner is identical with the Grabowsky; and the latter's success in the past is the evidence of its worth and the worth of the Horner.

Improvements and refinements have been made where they were necessary or beneficial; and the manufacturing established on a sound basis.

Our organization is composed of men whose experience covers the life of the motor truck industry—men who literally have grown up with it.

The Horner Truck, therefore, is not an experiment or an untried machine without a record.

Its manufacturers are not theorists or experimenters.

The organization is well equipped financially.

We have the nucleus of a sales and service organization in the field.

We are now building up a complete sales and service organization.

We want representation in the most advantageous centers—the very best, most energetic, most businesslike, most conscientious representation to be had.

Less will not be considered.

We have a truck that is new in name only; a truck with a long record of success back of it; with the right kind of manufacturing organization at the factory.

We want men who appreciate these things, and who are willing to make the most of them in their own territories.

On that basis we shall be glad to hear from you and discuss the possibility of a connection.

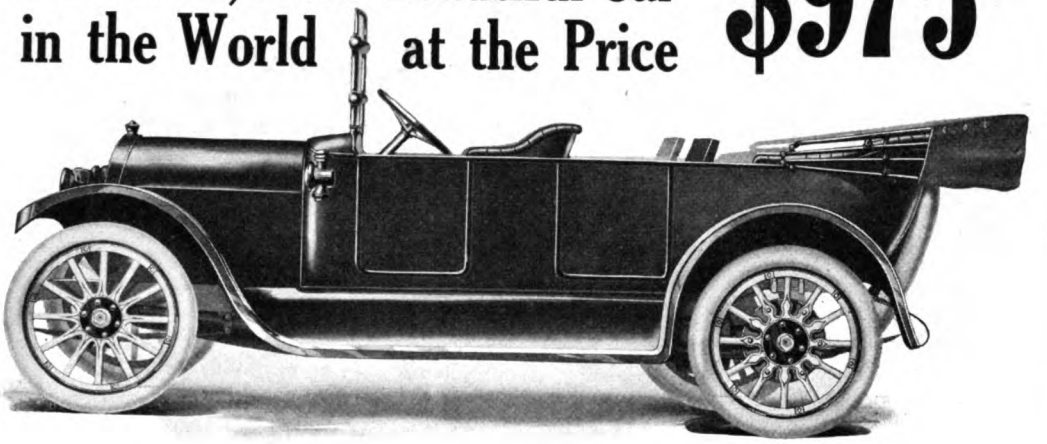
If the proposition appeals to you, please write us.

Detroit-Wyandotte Motor Co., 300 Fifth St., Wyandotte, Mich.

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$975 $975

The Biggest, Most Powerful, Most Beautiful Car in the World at the Price $975



The PARTIN-PALMER "38"

Six Passenger, 115 Inch Wheelbase, Left Hand Drive

The Partin-Palmer car is expressly designed and built to overcome all competition, and to give the purchaser the very finest car in the world at anything like the price. Compare it point by point with any car selling under $1200 and see the many advantages the Partin-Palmer offers. You will see at once that this is THE CAR WITH NO COMPETITION and at the popular price.

MR. DEALER, you realize that means THE RAREST OPPORTUNITY IN THE AUTOMOBILE WORLD TODAY!

Backed by a Powerful Organization

We invite every automobile dealer and prospective purchaser to investigate in detail the exceptional strength of the organization back of this splendid car. The men who comprise the organization are men of wide experience and reputation in the automobile world, and their well known manufacturing and executive ability are your assurance of the success of this car. The manufacturing facilities are ample to supply the demand PROMPTLY; and the great financial strength of the organization insures you that this car is here to stay.

Compare These Specifications With Other Cars

6 PASSENGERS
38 HORSEPOWER
115-INCH WHEELBASE
LEFT-HAND DRIVE
CENTER CONTROL, IMPROVED
Demountable rims
Prest-O-Lite
Large Mercedes type radiator
Dual ignition
Briggs guaranteed magneto
Three-quarter floating rear axle
Rear tire irons and extra demountable rims
Selective sliding gear transmission, three speeds forward and reverse
Double internal expanding brakes, 14-inch drums
Auxiliary folding seats, improved
Top, curtains, hood, windshield, speedometer, five lamps, horn, tool kit, repair outfit, pump, jack, etc.
Electric starting and lighting equipment to dealers at actual cost extra

You're Protected in the Partin-Palmer

When you take up the Partin-Palmer car, either as owner or dealer, you can know that your future interests are safe. Because it is the finest car ever built for the money its popularity is bound to grow, and the used Partin-Palmer car will not depreciate in value to the extent of other cars. Moreover, with this car there will be no question about getting parts WHEN YOU WANT THEM.

Get the Agency for Your Territory---NOW!

Agency rights for the Partin-Palmer are being snapped up fast, and orders are already booked for several thousand cars ahead. Better wire for reservation of your territory at once, and write for "Advance Catalogue" and details of our proposition.

Phone, Wire or Write

Partin Manufacturing Co., Suite 551, 29 S. La Salle St. CHICAGO, U. S. A.

$975 $975

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new idcas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street **NEW YORK CITY**



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

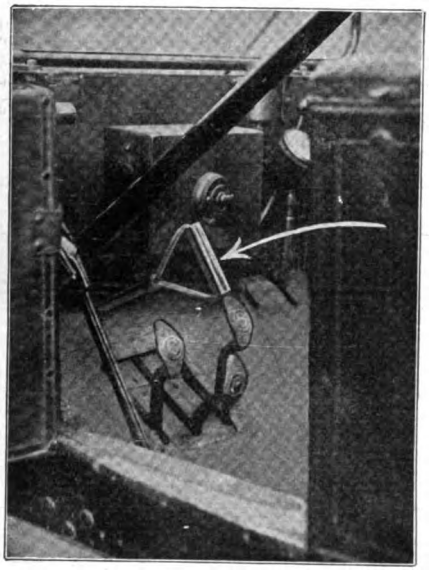
New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 29 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 408 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y. Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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$9.00--FORD ENGINE STARTER--$9.00

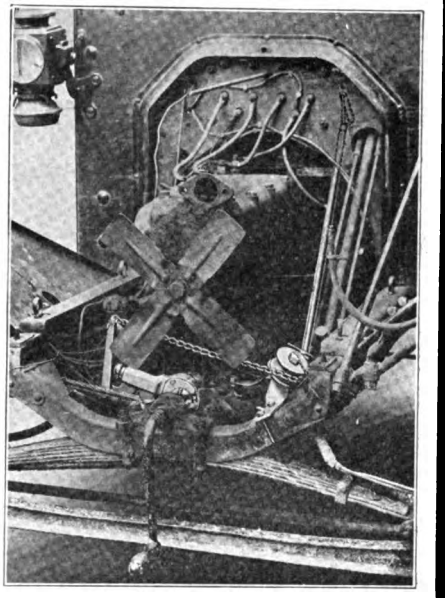
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT **STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

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"Always There"

The SPLITDORF "TS" TRANSFORMER is interchangeable with any type tube or dash coil and can be attached to any car. We will make a very liberal allowance on an old coil in exchange for one of the new style.

Write TO-DAY for particulars

SPLITDORF ELECTRICAL CO.
98 Warren Street, Newark, N. J.



75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

USE A

SCHRADER
Universal Tire Pressure Gauge

and Save Your Tires

Price, $1.00

For Sale by

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Kelly - Springfield

Automobile Tires

There's an awful lot of rubber, near-rubber and never-was-rubber put into tires today. The only part that interests us is the real rubber. Does it interest you?

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Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

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All eleven Eisemann Ignition Systems completed the recent Indiana-Pacific Tour without a single mishap, each giving one-hundred per cent. perfect performance for the entire distance.

When an automobile ignition system has reached the degree of perfection necessary to undergo successfully the most severe test ever attempted, it is not to be wondered that eleven of the nineteen cars entered relied upon Eisemann for their ignition.

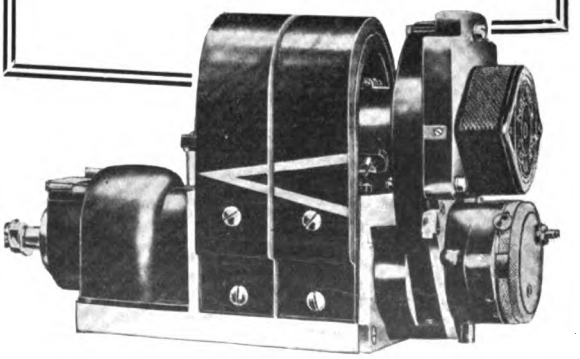
When a system of ignition has earned by merit alone the practical endorsement of as many motor car manufacturers as have adopted and are now using Eisemann Ignition for their cars, it is time others looked into the merits of Eisemann Ignition for their cars.

The Eisemann Magneto Co.

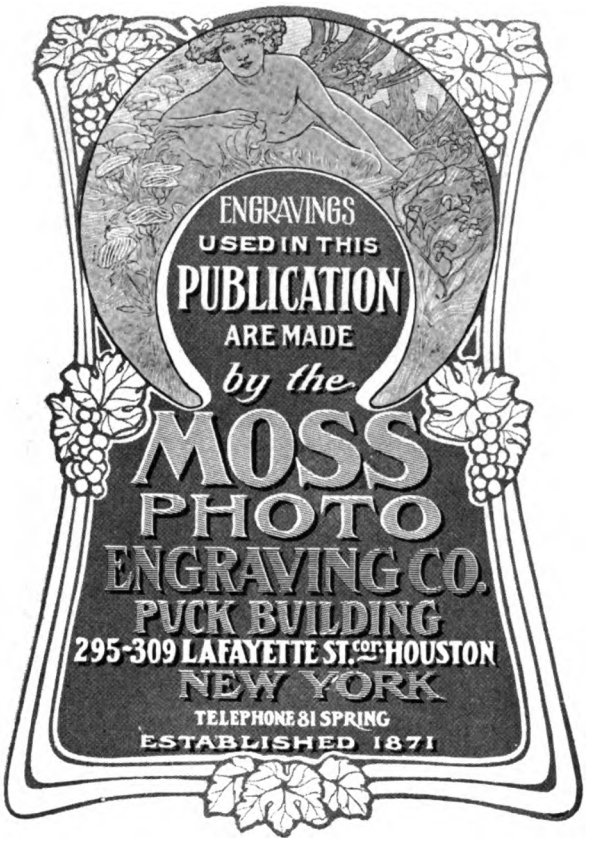
Sales and General Offices:
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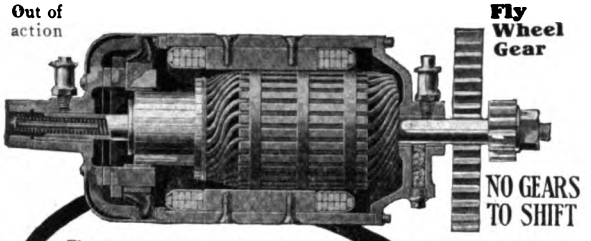


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Out of action

Fly Wheel Gear



NO GEARS TO SHIFT

The Starter that works directly on the flywheel, eliminating all the intermediate mechanism commonly associated with engine starters.

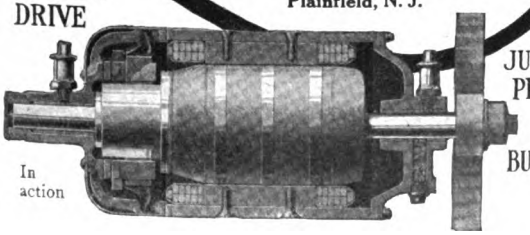
The pinion on the armature shaft engages the flywheel gear when the switch button is pressed, turns it, and slips automatically and silently out of mesh the instant the engine starts.

The RUSHMORE STARTER

Two sizes—"A," for the largest engines; "B," for medium sized engines. The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

RUSHMORE DYNAMO WORKS
Plainfield, N. J.

NO RATCHET DRIVE



JUST PRESS A BUTTON

In action



Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

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The Only Device that Absolutely Prevents Skidding

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WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

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WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

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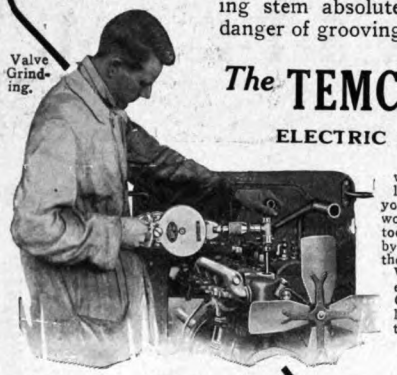
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ELECTRIC DRILL

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The gear teeth in your transmission and differential wouldn't wear out if they were not rubbing one upon another. The use of Dixon's No. 677 puts a layer of pure graphite over the metal surfaces—a surface that is unctuous and almost frictionless. And instead of a quick-wearing metal-on-metal grinding, you have a long-lasting graphite-on-graphite gliding. The results appear in lower repair bills, and a more lively car. Let us send "Lubricating the Motor," No. 23.



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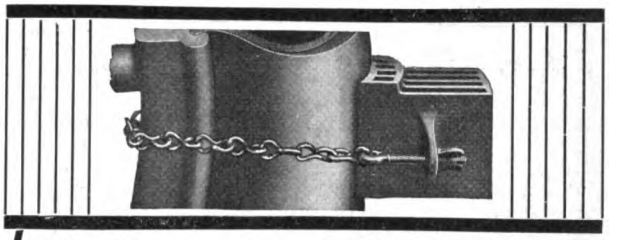
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YOU can now vulcanize the **factory way** right at home! No more digging into your pockets to pay big repair bills for punctures, blowouts and tire cuts. And **no more** risk of **losing** more than you **save, by Burning Your Tire!** In 20 minutes, meanest holes now fixed forever with the

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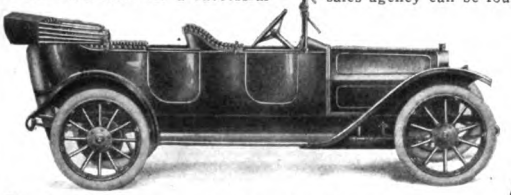
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Insures vou against premature wearing out of tires.

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Read Pages 42 and 43 of Motor World Issue of Aug. 28

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Detroit Mechanical Starter
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enables you to crank your engine from the seat. It operates mechanically—no electricity, no gas, no air.

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Electric Starting and Lighting

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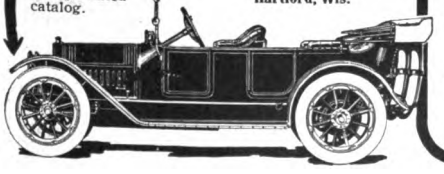
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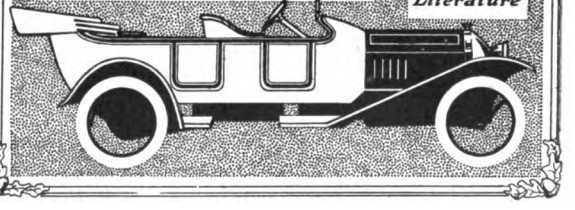
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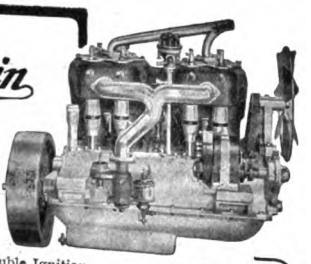
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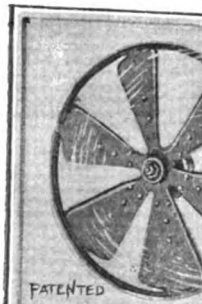
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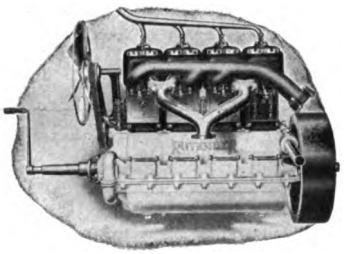
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Warner Auto-Meter
MAGNETIC PRINCIPLE

95% of all the speedometers to be made during 1913 will be built on the magnetic principle.

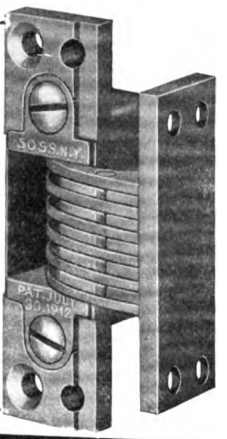
Warner Auto-Meter Factory, Beloit, Wis.
Address Dept. 4
Branches in all principal cities all over the world

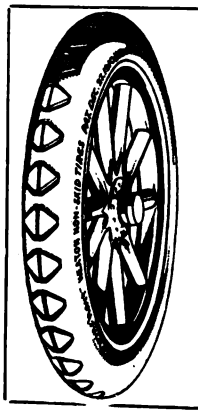
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for touring bodies, coupes, limousines, roadsters, etc., have an interlocking construction insuring strength, long wear, and absolute rigidity. The trouble avoided and time gained when hanging doors with "Soss Hinges" are important factors.

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The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
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NEWTONE
Motor Horn
Prices Have Been
REDUCED

See Announcement on Page 47

AUTOMOBILE SUPPLY MFG. CO.

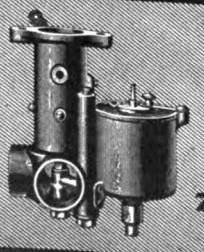
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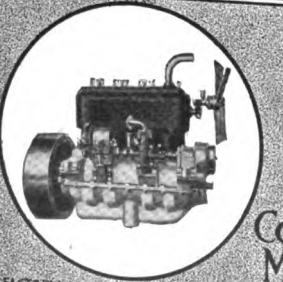
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ZENITH
Gives Standard Carburetion



ZENITH CARBURETOR CO.
DETROIT, MICH.

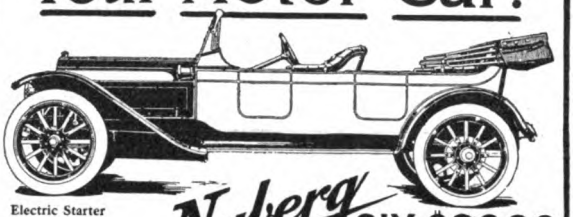
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will be revelations in mechanical features, refinements, finish, specifications, accessories and prices.

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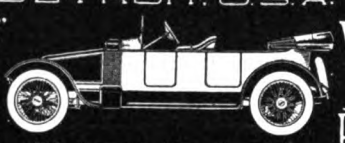
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Four-cylinder, 32-40 h. p., 120-inch wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

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Cole Motor Car Co. of Indianapolis

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More than 100,000 users of the Atwater Kent System will testify that it has increased the speed, flexibility and hill-climbing ability of their motors and developed a smoothness of running which was a revelation to them.

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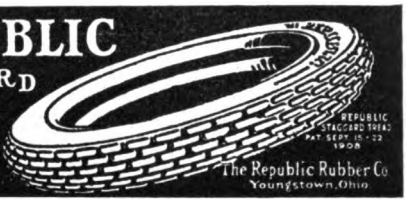
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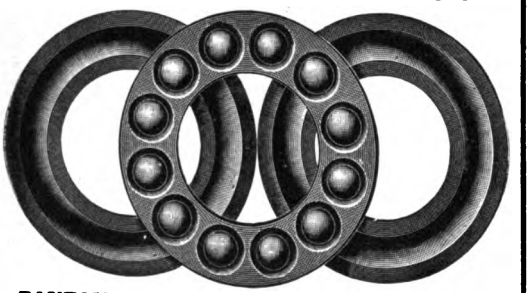
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Bright Inside the Flywheel

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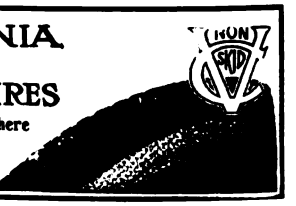


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A plug which cleans itself, which burns the carbon as fast as it forms—a plug which doesn't require frequent replacement and which, under ordinary conditions, should last as long as your engine —the C. A. Mezger

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Soot Proof Spark Plugs are controlled by basic patents which make successful imitation impossible. Built with a double chamber. Therefore they offer three times the resistance of any other spark plug made.

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The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory Write for Book "B."
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NATIONAL POWER PUMPS - $15
DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.
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When you ride on Diamond Tires you need have no fear of rim troubles.

Diamond (No-Clinch) tires are built with Perfect 3-Point Rim Contact that fit and hold the rim with a vise-like grip. This perfect rim fit means perfect balance—means that the tire is fighting the *road*, not the *rim*—insuring immunity from all forms of rim troubles, including cutting and breaking above the bead.

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Vitalized Rubber

Diamond {No Clinch} Tires

built with more air-room

It's the extra air-room that does the work. The more air-room the more resiliency, with less racking and jolting of your engine and car—which, in turn, means more comfort for you and your guests—*more comfort for your tires.*

All Diamond Tires are now made of Vitalized "More Mileage" Rubber, with Perfect 3-Point Rim Contact, No-Pinch Safety Flap and, if you wish, the now famous Safety (Squeegee) Tread.

So this time buy Diamond Vitalized Rubber Tires—you can get them to fit your rims from



Cross Section, Diamond Safety Tread Tire

Be a Diamond Dealer If you are not a Diamond Dealer now is the time to get in line. There is a Diamond Branch near you—get in touch today.

Diamond Dealers Everywhere

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KLAXON

"Electric horn" does not mean Klaxon

PUBLIC demand has forced every car manufacturer to equip with an electric warning signal.

If the signal is not a Klaxon, it is referred to in the maker's advertisements and catalogs as an "electric horn." The name is never mentioned.

In a majority of such cases, the makers are putting on the cheapest signal they can buy, merely to be able to advertise "electric horn" in their equipment.

Most of these are "vibrators"—similar in construction to "buzzers" used in offices and dining-rooms. Their note is neither powerful nor danger-expressing. Often not as much so as the old bulb-horn. The principle on which they operate renders satisfactory service impossible except for a short period when new.

KLAXONIZED CARS

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Alco	Mors (*European*)
Armleder	Multiplex
Autocar	National
H. H. Babcock	Nyberg
Benz	Oakland
Borland Electric	Ohio "Six"
Broc Electric	Oldsmobile
Buffalo Electric Roadster	Packard
	Peerless
Century Electric	Peugeot
Charon (*European*)	Pierce-Arrow
Chicago Electric	Pope-Hartford
Columbia	"Six"
Croxton	Pratt
Davis	S. & M. "Six"
F. I. A. T.	Schneider (*European*)
Havers "Six"	S. G. V.
Jeffery	Simplex
King	Stafford
Kissel	Staver
Knickerbocker	Stearns
Knox	Sternberg
Lancia (*European*)	Stevens-Duryea
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Marmon	Walker Electric
Matheson	Ward
Maxwell "Six"	White
Mercedes	Winton

KLAXONS cost from two to eight times as much as "electric horns." All of the best, the well known cars, are Klaxonized. Their makers believe that it pays them to spend this extra money for an accessory recognized as STANDARD. They say "Klaxon"—not "electric horn."



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON
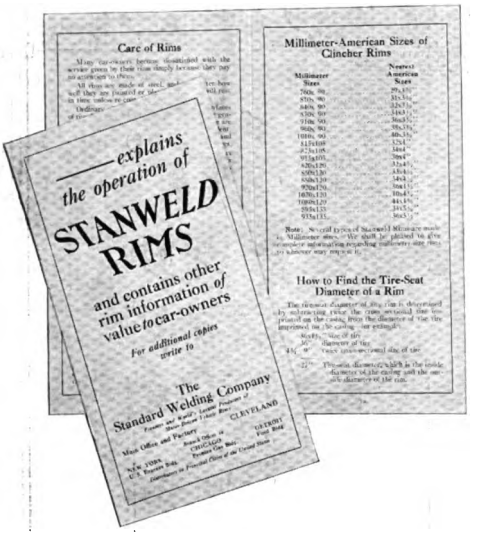
"The Public Safety Signal"



KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory. Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy.

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How Many Do You Want?

WHEN a customer asks for information regarding rim-equipment, just hand him a Stanweld Book.

It will please him and save you considerable time, because the book contains information that car-owners are continually asking for.

There is nothing lavish about the Stanweld Book, but it's chock-full of rim-information, and that's what you and your customers want.

Send a letter or postal asking for as many copies as you need. We may not be able to send them all immediately, but we'll send as many as the present quantity permits.

The Standard Welding Company

Pioneers and World's Largest Producers of Motor-Driven Vehicle Rims

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Distributors in Principal Cities of the United States

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A Trade Paper Giving the World's Motor New

Vol. XXXVII
No. 2

New York, October 2, 1913

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Two dollars a y

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STARTING-LIGHTING SYSTEM

Gray & Davis electrical equipment adds to the intrinsic and service value of any car. It is final and highly standardized in design and manufacture. It is the veteran in the field where volunteers are the rule.

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Since the inception of electric lighting for automobiles the Gray & Davis Dynamo has been used by leading motor car manufacturers. Its experimental stage was over with five years ago. It is not a converted generator, but a real dynamo doing a real dynamo's work. It is a 6-volt, constant speed machine. The voltage never varies. The service never fails.

The Starting Motor

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Simplicity in Design

Complicated wiring—there's the rub in much electric equipment. The Gray & Davis Starting-Lighting System is exceedingly simple. It has no complicated or involved controls. Press the pedal and the engine hums. A simple switch controls the lamps. The whole system is built for the layman.

YOU OWE IT TO YOURSELF TO INVESTIGATE THE GRAY & DAVIS STARTING-LIGHTING SYSTEM. OUR CATALOG AND FULL INFORMATION WILL BE SENT ON REQUEST.

GRAY & DAVIS, Inc., Boston, Mass.

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New Automatic Shock Absorber Gives Motoring Comfort a New Meaning

The standard of car comfort has been raised. Manufacturers today are making extra provisions for the motorist's comfort. Deeper upholstery, longer springs and larger tires have all helped in making easier riding cars.

But the greatest step in the perfection of motor car comfort has been the New Automatic Truffault-Hartford Shock Absorber.

Without it the motorist cannot realize the utmost motor comfort. It is as much a necessary part of each spring as the carburetor is of every engine.

Chief among the advantages of this new type of the famous Truffault-Hartford are its three frictional tensions, providing a separate spring control for every kind of road.

The first of these tensions, very slight, exercises the proper degree of absorption needed to take up the small but disagreeable spring oscillation generated by the car's speed on comparatively smooth roads. It does not encumber full play of the spring.

A second tension comes into play when the roadbed grows moderately rough. It offers a frictional resistance that meets this new demand to a nicety, continuing to maintain normal spring action.

A third tension responds to a change from smooth or moderately rough roads to roads of extreme roughness. This last tension is an absolute guard against jolts and jars that occur when the wheels hit a car track, cross-walk or culvert at high car speed.

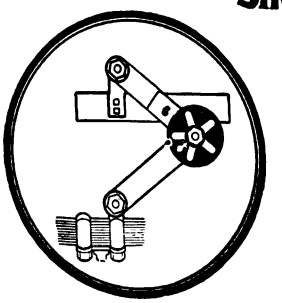
All tensions respond with unfailing regularity. The New Automatic lengthens the life of the tires, prevents spring breakage and brings unsurpassed ease of riding.

Any car, no matter how stiff or flexible its spring equipment is easily fitted with the

New Automatic

Truffault-Hartford

SHOCK ABSORBER



Catalog on Request

And any car fitted with this device is a better car. These absorbers are neatly interposed between the axle and frame where they cannot injure appearance. $60 per set of four. Other Truffault-Hartfords from $15 to $50. Order from your dealer today.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

Office and Works: 142 Bay St., Jersey City, N. J.

Manufacturers of Hartford Electric Lighting and Starting System

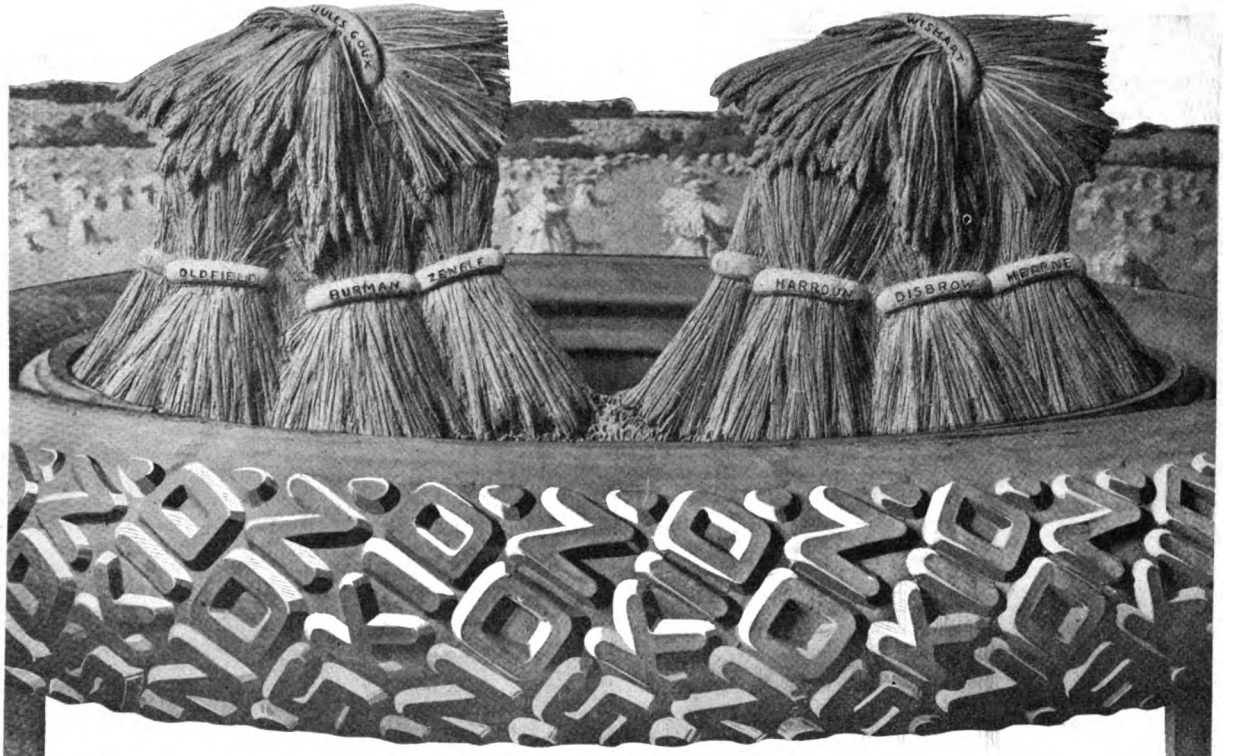
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Capsheaves in the Harvest of Firestone Victories

At Indianapolis this year the capsheaves were placed in the great harvest of victories for Firestone Tires when they took First and Second places in the 500-Mile International Sweepstakes — the only cars in the race equipped with Firestone Tires—representing 100 per cent victory.

All the other big racing events of the year were also won by Firestone Tires — Panama-Pacific Road Race, July 4; Montamara Festo Races, July 5 and 7; Santa Monica Race, August 9; and Corona Race, September 9.

In winning these victories, Firestone Tires have withstood every condition that cruelly tests a tire.

Such triumphs over all leading makes of both America and Europe —when tire strength meant success and fame, and tire weakness meant failure—completely prove the correctness of Firestone materials and building principles.

Wrapped tread construction — the two-cure process that allows rigid inspection in the course of manufacture—the elimination of defects that cause tire breakdowns —the process that, by means of open steam vulcanizing, gives a tread-toughness and wear-resistance unapproached—these principles have made Firestone supremacy possible.

Firestone tread-toughness and greater tread-thickness are prime factors in Firestone success. An inspection of cross sections shows that these elements actually exist in Firestone.

Why not let these proved features, plus the abundance of measure in Firestone quality and materials, roll up big mileage scores for you—lower your tire cost per mile—bring to you all the benefits and advantages that Firestone users enjoy?

The Firestone Tire & Rubber Co., Akron, Ohio---All Large Cities

"America's Largest Exclusive Tire and Rim Makers"

Pneumatic Tires, Truck Tires, Pleasure Electric Tires, Fire Apparatus Tires, Rims, Tire Accessories, Etc.

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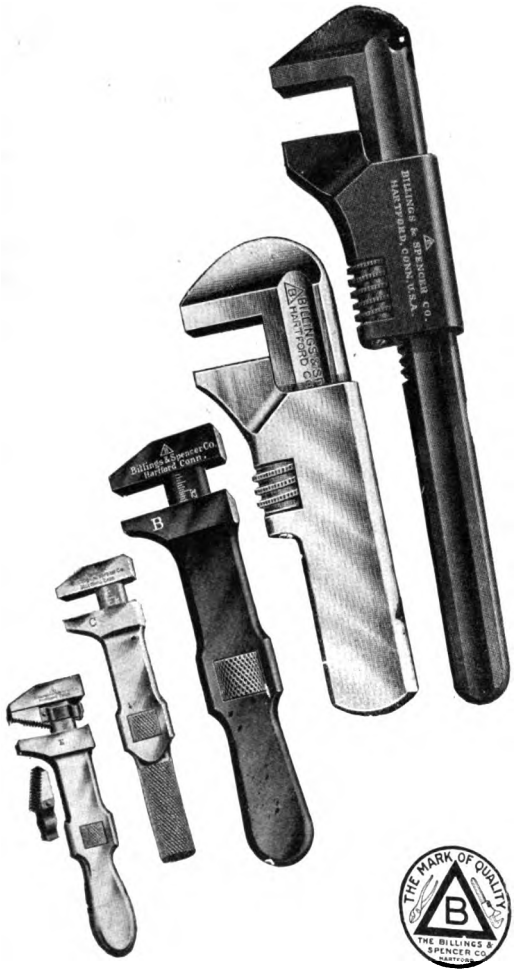
SMOOTH TREAD OR NON-SKID TIRES

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"The Tools That Are Guaranteed"

Some B. & S. Wrench Types



The steel from which B. & S. tools are drop-forged is the finest for the purpose.

The workmanship the most skillful.

The tool making experience the most complete.

For nearly a half century the triangle trade-mark has been the trademark of standard tools.

Write for Catalog and Prices

The Billings & Spencer Co.

HARTFORD, CONN.

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Established 1885

¶ This is when we started to manufacture oils and when the automobile industry was in its infancy. We then produced

MONOGRAM OIL

which has been continually successful under that one brand name ever since. The Test of Time is what really proves the worth of any product, and we feel our oil is as much the standard of merit now as it was 10 years ago.

¶ Insist — Demand the MONOGRAM brand.

NEW YORK LUBRICATING OIL CO.
Consolidated with
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1914 Overland

$950

With Gray & Davis electric starter and generator—$1075
Prices f. o. b. Toledo

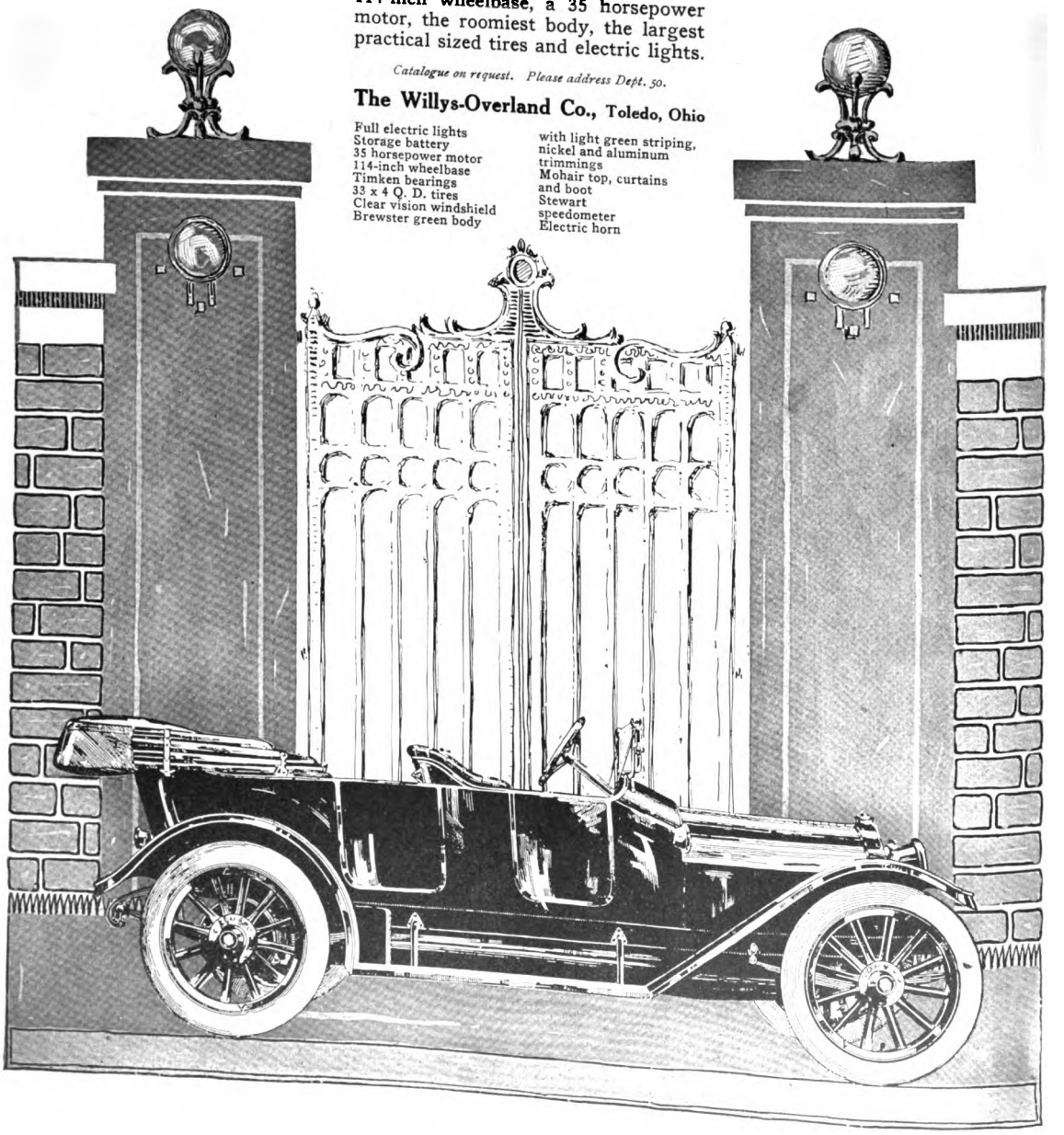
FROM any other factory, under any other name, such specifications cost $1200.

The new 1914 Overland has a 114-inch wheelbase, a 35 horsepower motor, the roomiest body, the largest practical sized tires and electric lights.

Catalogue on request. Please address Dept. 50.

The Willys-Overland Co., Toledo, Ohio

Full electric lights
Storage battery
35 horsepower motor
114-inch wheelbase
Timken bearings
33 x 4 Q. D. tires
Clear vision windshield
Brewster green body
with light green striping, nickel and aluminum trimmings
Mohair top, curtains and boot
Stewart speedometer
Electric horn



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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, October 2, 1913

TIRE MAKERS TO BE AMONG ABSENT AT NATIONAL SHOWS

Take Unexpected Action and May be Joined by Makers of Bearings—M. A. M. Declines to Sanction Boston Accessory Display.

Tires, which for so many years have constituted one of the most conspicuous displays in the accessory department of the National shows in New York and Chicago, in all human probability will be even more conspicuous by their absence from the shows of next January. For it has just become known that the tire group of the Motor & Accessory Manufacturers, Inc., has reached an agreement not to exhibit at either New York or Chicago.

While it is not known that the bearing manufacturers who are members of the M. A. M., and who do not comprise what is known as a "group" in that association, have reached an agreement of any sort, it is understood also that few of them will exhibit their productions at either of the forthcoming shows.

Although the absence of the tire people particularly will mean the absence of many proud names which have appeared at the shows since their inception, the decision of the tire makers to be "among the missing" themselves is not wholly surprising. It is known that, like many other manufacturers of parts and accessories, they have obtained comparatively no real benefit from their displays and that each of them has participated in the shows largely because of knowledge that the "other fellow" intended to display, and for such passing advertisement as they might secure. It undoubtedly was these circumstances that had most to do with the decision of the tire producers.

It was anticipated that, like the car makers comprising the Automobile Chamber of Commerce, the Motor & Accessory Manufacturers would meet today for the purpose of allotting their space at the National exhibits, but the meeting of the latter has been postponed one week, or until Thursday next, 9th inst. Despite the withdrawal of the tire manufacturers, however, it is stated that the M. A. M. will take all the space which has been set aside for their occupancy at both New York and Chicago.

Incidentally, it has just become known that the M. A. M. for the first time has refused to sanction the Boston show, and while it is possible that pressure which is being brought to bear may influence a change of the decision, it is more likely that the Boston exhibition will have to get along without M. A. M. approval.

Johns-Manville Acquires Soot-Proof Plug.

Soot-Proof spark plugs henceforth will be marketed wholly by the H. W. Johns-Manville Co., of New York, which has acquired a substantial interest in C. A. Mezger, Inc., which established the Soot-Proof plug on its present high plane. The deal was wholly unexpected, owing to the fact that the Johns-Manville company only recently undertook the manufacture of a plug of its own, but it is believed that the superior selling facilities of the latter will do much to enhance even the present large sale of the Soot-Proof. The Mezger factory, which is located on the outskirts of New York City, will be continued in operation but will have absolutely nothing to do with the sale of its product.

Why it Will be Houk Manufacturing Co.

Houk Manufacturing Co., and not Houk Wire Wheel Co., as first proposed, will be the new title of the McCue Co., of Buffalo, the control of which, as stated in last week's Motor World, has been acquired by George W. Houk, of Philadelphia. While wire wheels will constitute the bulk of production, the fact that axles and forgings comprise a not insignificant department of the business led to the substitution of "Manufacturing" for "Wire Wheel" in the corporation's name.

END OF WEEK MAY SEE MU REVISED TARIFF MADE

House and Senate Reach Agree and Make $2,000 Dividing Lin Car Classification—"Dumpin Clause" not Retained.

Points of disagreement having bee onciled by the conference committees House and Senate, the Underwood tar is now in shape for final passage and, probability, will be enacted before the of the present week. As President W will immediately attach his signatu will become a law and the reduced ra into effect at once.

In the final overhauling of the bi conferees again altered the rates ap to automobiles, or, more correctly agreed on other classification. Ori the House provided a tax of 45 pe on finished automobiles, 30 per ce chassis and 20 per cent. on parts, t isting duty being 45 per cent. on all productions. When the bill reache Senate the finance committee of tha disagreed so widely with the House provide a distinct classification of a biles according to their value, the committee providing the following Finished automobiles at $1,500 or o per cent.; at less than $1,500 and mo $1,000, 30 per cent.; at less than $1, per cent.; chassis and parts, 30 per which rates were adopted by the Sen August 5th after two hours' discussio

Before the conference committees houses got together they reconcile differences, so far as automobiles a cerned, by drawing the line at $2,0 duty on cars valued at $2,000 an being maintained at the present r per cent., while cars of lesser valu reduced to 30 per cent. Chassis an were permitted to stand at 30 per c is these rates which will be enacted.

There was no disagreement on tir

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duty on which will be reduced from 35 to 10 per cent.

Anti-friction balls for bearings, which constitute one of the items which are largely imported, are reduced from 45 to 35 per cent. and chains from 46.59 to 25 per cent.

One of the unexpected outgrowths of the Congressional conferences was the elimination of the "dumping clause" which originally was incorporated in the House bill and which provided that when the price at which goods are consigned to this country is less than the price at which they are sold in the country of their manufacture an additional duty, equal to the difference in the two prices, shall be levied. The House conferees fought hard for its retention, but finally surrendered.

Categorically, the duties which apply most directly to the automobile industry are as follows:

Article.	Old rate per cent.	New rate per cent.
Automobiles, value over $2,000	45	45
Automobile bodies	45	45
Automobiles, value under $2,000	45	30
Automobile chassis	45	30
Automobiles, finished parts	45	30
Axles, and parts thereof	14.90	10
India rubber manufactures, known as gutta percha (tires)	35	10
Anti-friction balls	45	35
Forgings	30	12
Bolts, iron and steel	20.59	10
Nuts and nut blanks	6	5
Nut washers	6	5
Spir.l nut locks and nut washers	New	30
Iron castings	28.31	10
Malleable iron castings	13.58	10
Sprocket and machine chains	46.59	25
Tubes, pipes and flues	29.37	20
Cylindrical or tubular tanks	30	20
Files, machine cut	60.47	25
Files, hand cut	60.47	25
Steel rivets, studs and points	44.30	20
Aluminum, crude	56.41	*2c.
Aluminum plates, bars, etc.	55.16	*3½c.
Metallic mineral substances	20	10
Nickel and nickel oxide	15.96	10
Nickel sheets or strips	35	20
Machine tools	30	15
Machinery	45	20
Other iron and steel manufactures	45	20
Manufactures of Asbestos	25	20
Asbestos, unmanufactured	Free	Free
Mica, unground, value under 15c. per pound	34.62	*4c.
Mica, unground, value over 15c. per pound	34.62	*25c.
Mica, cut, and mfrs. of	34.62	*30c.
Earth and mineral wares, not decorated	35	20
Carbons, unmanufactured	20	15
Lava tips for burners	10c. gr. & 15	15
Bone dust, meal and ash	Free	Free
Leather, grained, buffed, split	7½	Free
Other leather	15	Free
Crude India Rubber	Free	Free
Vulcanized rubber manufactures	35	25

Tire fabric or fabric suitable for use in pneumatic tires, and fabrics with fast edges not exceeding 12 inches in width, all of the foregoing made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber, 25 per cent. ad valorem.

*Per pound.

Receiver Will Sell 40 Schacht Vehicles.

Forty finished vehicles, comprising 15 touring cars, 6 roadsters, 15 trucks and 4 delivery wagons, are included in the property of the Schacht Motor Car Co., of Cincinnati, which the court has ordered sold by the receiver at public auction on Monday, October 20th. The assets also include a considerable supply of parts and accessories, to say nothing of both metal and wood working machinery.

GOODYEAR AGAIN DECLARES REPORT OF MERGER UNTRUE

Repudiates Oft-Recurring Rumor of Alliance with Big Tire Interests—Cites Volume of Business as Substantial Proof.

Expressing the hope that it will "dispose for all time of such groundless rumors," F. A. Seiberling, president of the Goodyear Tire & Rubber Co., has issued a statement amplifying his denial of the recurring stories that his company is to be taken over, merged or in some way controlled by the United States Rubber Co.

"There is not now and there never has been any negotiation of any sort between Goodyear and any other company," he says. "There is not the remotest likelihood that there ever will be.

"The Goodyear Tire & Rubber Co. is just now completing the largest year's business in its history. Its sales for 1913 will pass the $33,000,000 mark. This, compared with our total of $26,000,000 for last year, shows the strides that Goodyear is steadily making. The prospects for 1914 indicate continued substantial growth.

"We have supplemented our tire line with a complete mechanical goods department, thus balancing our product, and are prepared to continue as we have been doing.

"I trust that this statement will settle once for all the groundless rumors that have been circulating of late. All these reports are inspired, are intended to injure us and can certainly do no one any good except, perhaps, the stock jobbers. Ours is an organization of young men who have made Goodyear the largest single producer of automobile tires, truck tires, motorcycle tires and carriage tires in the world, and I trust that it will be many years before that organization loses its splendid energy and vigor. Our capital is small. There is not one dollar of watered stock in our company. We are well satisfied with our present position and propose to continue to operate independently and with a free hand."

National's Best Year; Officers Reelected.

After listening to reports showing that during the fiscal year ending September 1st the company had enjoyed the best twelve-month in point of sales and profits in its 14 years' existence, the stockholders of the National Motor Vehicle Co., of Indianapolis, have not only reelected all of the directors but so flattering are the reports that they expressed their satisfaction in a resolution of thanks and congratulations.

The directors reelected are as follows: A. C. Newby, Robert Martindale, P. E. Manchester, William Guy Wall and George M. Dickson. These directors in turn reelected all of the officers, as follows: A. C. Newby, president; William Guy Wall, vice-president; George M. Dickson, secretary, treasurer and general manager.

McFarlan "Six" Avoids Embarrassment.

Failure of the McFarlan Carriage Co., of Connersville, Ind., which made the McFarlan "six" car, has caused the McFarlan Motor Car Co. to take over the production of that model. Previously the Motor Car company handled only the sales and service ends of the business, and to better serve its larger purposes the McFarlan Motor Car Co. was incorporated under the laws of Indiana with a capitalization of $100,000. A. H. McFarlan, president of the company, states that the new arrangement will permit dealers and owners to be served in better shape than ever before. The petition in bankruptcy against the McFarlan Carriage Co. was filed Friday last, 26th ult., by the Indiana Lamp Co., the Ansted Spring & Axle Co. and the Scheidel & Thompson Mfg. Co.

Willys Purchases a Ball-Bearing Plant.

Hereafter the Willys-Overland Co., of Toledo, will manufacture its own ball bearings. This brings it one step nearer the consummation of the Willys policy of constructing everything which goes into Overland cars. To that end, the Willys-Overland Co. has purchased the Globe Ball Bearing Co., of Norwich, Conn., the entire machinery of which will be transferred to Elmira, N. Y., where it will be operated, in the production of ball bearings, by the Morrow Mfg. Co., one of John N. Willys's several subsidiaries.

Invites New Bids for Cutting Property.

Having rejected the bid of $30,000, made by W. M. Thompson, of the Jackson City Bank, for the assets of the Cutting Motor Car Co., of Jackson, Mich., the court has authorized the receiver to invite sealed bids up to Monday next, October 6th. It is specified that bids must be not less than $30,000 and the assumption of encumbrances amounting to approximately the same amount. On September 22nd last, the appraised value of the Cutting property was $172,969.17.

Goodrich Abandons Canadian Project.

There will be no B. F. Goodrich factory in Canada, after all. Several months since it was stated that the big Akron company had acquired a site across the border, and it is known that plans for the erection of a factory were in hand, but, meanwhile, circumstances have altered cases and the project has been postponed indefinitely.

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BARBER "BOBS UP" WITH A PATENT ON A SPARK PLUG

Brings Suits Against Three Dealers for Selling Three Different Brands —Claims Rights to Much Used Two-Piece Insulation.

Although the three manufacturers concerned had heard little of William Barber, of Brooklyn, N. Y., prior to yesterday, 1st inst., he introduced himself into spark plug circles at that time in no uncertain terms by filing three patent lawsuits in the United States District Court for the Southern District of New York; he claims a basic patent on the type of plugs which bear the names Red Head, V-Ray and Sootless and demands an injunction, accounting and damages.

Barber is a sort of free lance inventor and took out a patent June 30, 1903, under the number 732,032 on a plug wherein the porcelain is inside the bushing at the ignition end and extends part way back through the plug toward the cable end. The remainder of the insulating material is specified as being of some substance less brittle than porcelain. He never engaged extensively in manufacture, although he is said to have produced a few plugs.

This week he began litigation against three New York City accessory and supply dealers—Frederick Ray, F. Arthur Haines and Daniel R. Smith, who trade as Smith-Haines at 1761 Broadway, the Motor Car Equipment Co., of 240 West 56th street, and the Lowe Motor Suppplies Co., of Broadway and West 55th street. The charge is that Smith-Haines sold V-Ray plugs, the Motor Car Equipment Co. Sootless plugs and the Lowe company Red Heads.

The cases are largely in the nature of a test and will probably be defended principally by the manufacturers, who are: V-Ray, the M. M. M. M. Co., of Marshalltown, Ia.; Sootless, the Oakes & Dow Co., of Boston; Red Head, the Emil Grossman Mfg. Co., of New York City.

Private Sale of Michigan Buggy Assets.

Although the trustee, the Detroit Trust Co., favored public auction of the assets of the Michigan Buggy Co., of Kalamazoo, the Federal court, in the person of Judge Sessions, has ordered the property disposed of at private sale. Sealed bids, as a whole or in parcels, will be reported to Judge Sessions in the Federal court in Grand Rapids tomorrow, 3rd inst.

Previous to the action of the court, E. F. Gerber, of Pittsburgh, one of the largest agents for the Michigan car, made two separate offers for the property, both of which, however, were rejected. He, however, has incorporated a Michigan Motor Car Co., under Delaware laws, with an authorized capital of $1,000,000, and will make another offer for the property.

Willys Himself Again Assumes Reins.

Due to the death of George W. Bennett, vice-president and general manager of the Willys-Overland Co. and the Willys subsidiaries, John N. Willys himself has reassumed the active management of all those interests which, during the past year, he had left largely in Bennett's hands while devoting himself to his financial affairs.

C. F. Jameson, one of the Willys sales managers and Bennett's chief assistant, has, however, been promoted and will have entire charge of the sales of all of the Willys companies. He also has been elected a director and invested with the title of second vice-president. H. B. Harper, former export manager, also has been elevated to the sales management of the Willys-Overland Co., and D. W. James to the post of assistant to the president.

Willys, of course, retains the office of president of all of the companies of which he is the owner. The first vice-presidency, previously held by Bennett, has been filled by the election of Isaac Kinsey. Jameson, as stated, is second vice-president. The other officers are Walter Stewart, treasurer, and Royal R. Scott, secretary.

Jeffery-Dewitt Increases to $500,000.

In order to permit of enlargement, the Jeffery-Dewitt Co., of Detroit, has been reincorporated under the laws of Maine with an authorized capital of $500,000. Practically all of the stock has been subscribed for and none will be offered to the public. Part of the Jeffery-Dewitt Co. enlargement is taking the form of a three-story building, 200 x 53 feet, which is in course of erection, and also two additional kilns to provide for the manufacture of porcelain insulators of all kinds, the company having decided to produce such insulators for general electric purposes, for plumbers' use, etc.

Two Small Bids for Midland Assets.

For the property of the Midland Motor Co., of East Moline, Ill., appraised at $107,376, only $43,500 was offered at the receiver's sale last week. It was put on the block in two parcels, For one, including 13 acres of land, buildings and stationary equipment, George W. Johnson, of the Moline Furniture Co., offered $17,000. For the second lot, which includes the machinery and stock on hand, S. M. Wintrenitz, of Chicago, who makes a specialty of purchasing such bankrupt property, bid $26,500. If the sale is approved by the court, it will net the creditors only about 12 per cent.

AMERICAN POSSESSIONS BUY MORE CARS FOR LESS MONE

Increase Number Purchased by 10 p Cent. but Average Price is Lower — Phillipines Leads in Volume and Gain.

While the non-contiguous American pc sessions, which are not included by the Fe eral statisticians in their tabulation of e ports to foreign countries, given in Mot World last week, increased the number cars they purchased from the parent cou try in July of this year by 10 per cent., t lesser value per car resulted in a decrea of 7 per cent. in the value of the cars. T gain of July, 1913, over July, 1912, was cars, but the value was less by $13,878.

The average value in July a year ago w $1,878 and last July $1,588, a drop of $2 or 15 per cent. The Philippines rank fi as buyers of cars in July last and also r cord the greatest gain, taking 21, or 68 p cent., more cars and increasing the value $21,315, or 41 per cent. Alaska gained, al while Hawaii and Porto Rico entered t loss column. Parts decreased by $5,874, 28 per cent. For seven months ending w July, 1913, the gain in cars was 92, or per cent., and in value $39,168, or 3 per ce as compared with the same period of t preceding year.

Engines and tires are not included in t parts allotted to each of the possessio and the statisticians give only the shipme of tires to Hawaii and Porto Rico. Th figures are: Hawaii, July, 1912, $35,228; Ju 1913, $35,338; loss, $110. Porto Rico, Ju 1912, $10,955; July, 1913, $21,346; gain, $1 391.

The figures in detail for the month July and for the seven-month period are follows:

	July 1912 No.	July 1912 Values.	July 1913 No.	July 1913 Valu
Hawaii—Cars	47	$83,734	32	$67,
Parts*	..	10,431	..	7,
Porto Rico—Cars	23	53,454	22	32,
Parts*	..	5,834	..	6,
Philippines—Cars	31	51,016	52	72,
Parts*	..	4,266	..	
Alaska—Cars	2	5,250	7	6,
Parts*	..	405	..	
Total cars	103	$193,454	113	$179,
Total parts*	...	20,936	...	15,
Total cars and parts*	103	$214,390	113	$194,

	Seven Months Ending Jul 1912 No.	1912 Values.	1913 No.	1913 Valu
Hawaii—Cars	344	$567,603	411	$709,
Parts*	...	39,895	...	58,
Porto Rico—Cars	263	406,180	176	229,
Parts*	...	74,439	...	54,
Philippines—Cars	287	395,480	393	468,
Parts*	...	36,458	...	33,
Alaska—Cars	12	16,864	18	17,
Parts*	...	2,958	...	2,
Total cars	906	$1,386,127	998	$1,425,
Total parts*	...	153,750	...	148,
Total cars and parts*	906	$1,539,877	998	$1,573,

* Does not include engines and tires.

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BANNER YEAR FOR GENERAL MOTOR; PROFITS $8,100,000

Gross Sales Exceed $85,000,000 and Undivided Earnings Increased by Nearly $3,600,000 —Ten Unprofitable Units Eliminated.

During the fiscal year ending July 31st the gross sales of the General Motors Co. amounted to $85,603,919.85, of which $8,284,139.79 is net profit. After paying 6 per cent. interest on first lien notes, and the preferred dividend of 7 per cent., the undivided profits for the twelvemonth were $6,410,937.28, making "by far the most successful year in the company's history," according to the annual report just issued.

In 1912 the gross sales amounted to $64,744,496.02, of which the net profit was $4,838,448.65, which, after paying interest and dividends, made the undivided profits $2,856,082.76.

In rendering the report, President Nash states that the "schedule of production for the coming year has been somewhat increased," but as it cannot be predicted whether the partial failure of this year's crops in certain parts of the West may not affect the sale of cars, arrangements have been made to meet such possible shrinkage, should it occur.

The total assets of General Motors and its subsidiaries are $58,538,160.02, as against $54,958,158.60 at the close of the 1912 year. The liabilities, including the outstanding capital stock, totals the same amount, of which $5,775,305.01 is represented by "reserves for special purposes" and $2,945,379.47 by surplus. For 1912, the corresponding items were $4,299,371.56 and $1,262,598.88, respectively.

The favorable showing was made despite the fact that during the twelvemonth several unprofitable companies, whose operations resulted in losses, were discontinued, and also after deducting $1,098,482.56 for depreciation of buildings and equipment.

As a result of the pruning process, the number of active companies comprising the General Motors organization has been reduced from 24 to 14, those remaining in operation being as follows: Buick Motor Co., Cadillac Motor Car Co., Cartercar Co., Champion Ignition Co. (spark plugs), General Motors Export Co., General Motors Truck Co., General Motors (Europe), Ltd., London, Eng., Jackson-Church-Wilcox Co. (steering gears), Michigan Motor Castings Co. (castings), Oakland Motor Car Co., Olds Motor Works, Northway Motor & Mfg. Co. (engines), McLaughlin Motor Car Co., Ltd., Oshawa, Can., and the Weston-Mott Co. (axles).

CONDENSED COMPARATIVE CONSOLIDATED BALANCE SHEET

Assets

	July 31, 1913	July 31, 1912
Fixed Assets: Real estate, plants, equipment	$20,458,977.52	$19,280,888.99
Patents, agreements, etc.	1,508,671.69	1,871,436.20
Miscellaneous investments	367,062.80	560,499.50
Current and working assets:		
Cash in banks and on hand	6,236,251.01	3,080,920.98
Notes and accounts receivable	3,449,335.45	4,229,112.51
Inventories	18,170,907.21	17,578,366.15
Prepaid expenses	412,756.20	422,736.13
Good will, representing excess of appraised value over book value of capital stocks of subsidiary companies owned, less reserve	7,934,198.14	7,934,198.14
Total	$58,538,160.02	$54,958,158.60

Liabilities

Capital Stock:			
Preferred stock (authorized $20,000,000) issued	$18,038,400.00		
Less: In treasury of General Motors Co.	$1,741,900.00		
In treasury of subsidiary companies	1,311,300.00		
Total	$3,053,200.00		
In hands of public		$14,985,200.00	$14,936,800.00
Common stock (authorized $40,000,000) issued	$19,874,030.00		
Less: In treasury of General Motors Co.	$3,233,746.95		
In treasury of subsidiary companies	163,500.00		
Total	$3,397,246.95		
In hands of public		16,476,783.05	16,371,183.05
Total in hands of the public		$31,461,983.05	$31,307,983.05
Funded Debt:			
6 per cent. first lien five-year sinking fund gold notes		10,935,000.00	12,452,000.00
Outstanding capital stock (par value) and surplus of subsidiary companies, being the portion not owned by General Motors Co:			
Capital stock		578,000.00	578,000.00
Surplus		409,251.72	413,838.50
Current Liabilities:			
Accounts payable		4,821,744.20	2,853,021.77
Notes payable (Weston-Mott Co.)		300,000.00	600,000.00
Interest, taxes, and pay-rolls accrued, not due		1,048,970.32	929,854.84
Reserve for three months' proportion of dividend on preferred stock, payable November 1		262,526.25	261,394.00
Reserves for special purposes		5,775,305.01	4,299,471.56
Surplus		2,945,379.47	1,262,594.88
Total		$58,538,160.02	$54,958,158.60

Income Account

	Year Ending July 31, 1913	Year Ending July 31, 1912
Net profits after deducting expenses of manufacture (including maintenance), selling and administration as well as taxes, insurance, depreciation and interest on temporary loans	$8,284,139.77	$4,838,448.55
General Motors Co. proportion thereof	$8,184,052.82	$4,746,756.50
Accrued interest on General Motors Co. 6% first lien notes	724,581.46	850,463.23
Balance	$7,459,471.36	$3,896,293.27
Preferred dividends at rate of 7%	1,048,534.08	1,040,210.51
Undivided profits	$6,410,937.28	$2,856,082.76

Profit and Loss Account

	Year Ending July 31, 1913	Year Ending July 31, 1912
Profit and loss surplus at beginning of year	$1,262,594.88	$1,240,175.26
Add undivided profits per income account above	6,410,937.28	2,856,082.76
	$7,673,532.16	$4,096,258.02
Charged off for reduction of inventories and assets as carried on books October 1, 1910, and liquidation losses	4,728,152.69	2,833,663.14
Profit and loss surplus July 31	$2,945,379.47	$1,262,594.88

Working Capital

	1913	1912
Current Assets:		
Cash	$6,236,251.01	$3,080,920.98
Notes and accounts receivable	3,449,335.45	4,229,112.51
Inventories	18,170,907.21	17,578,366.15
Prepaid expenses	412,756.20	422,736.13
Total current assets	$28,269,249.87	$25,311,135.77
Less Current and Accrued Liabilities:		
Current accounts payable	$4,821,744.20	$2,853,021.77
Notes payable (Weston-Mott Co.)	300,000.00	600,000.00
Interest, taxes and pay-rolls accrued, not due	1,048,970.32	929,854.84
	$6,170,714.52	$4,382,876.61
	$22,098,535.35	$20,928,259.16
From which deduct amount reserved for three months' proportion of preferred dividend payable November 1	262,526.25	261,394.00
Net working capital	$21,836,009.10	$20,666,865.16

Capital Expenditures

The following amounts were charged to capital account during the year:—

For additions to real estate, plants, and equipment	$1,783,054.48
Less sundry credits to plant account during year	604,965.95
Net increase	$1,178,088.53

Prest-O-Lite Goes After Mohawk Man.

The Prest-O-Lite Co., of Indianapolis, has filed suit in the Supreme Court for New York county against Amos T. Mason, who trades in Mohawk, N. Y., as the Herkimer Auto Supply Co. It claims to have sold him goods between July 12 and September 14, 1912, to the value of $89 and that he paid nothing on the account.

Allen Locates Branch in Minneapolis.

The Allen Motor Co., of Fostoria, Ohio, which recently placed its car on the market, has established a Northwestern branch at 1526 Hennipen avenue, Minneapolis. It will control the States of Minnesota, North Dakota, Montana, Idaho, Washington, Oregon and considerable territory in Wisconsin and Iowa.

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The Week's Incorporations

San Angelo, Tex.—San Angelo Motor Club, under Texas laws. Corporators—C. E. Webb, H. J. Jackson, A. B. Sherwood.

Detroit, Mich.—White Motor Sales Co., under Michigan laws; authorized capital, $5,000; to deal in motor cars. Corporators—A. L. Waldorf, W. J. Hays,

Cleveland, Ohio—Cleveland Motor Lamp & Radiator Co., under Ohio laws; authorized capital, $10,000. Corporators—W. H. Montie, J. L. Ballash, E. R. Keieler.

Spokane, Wash.—Ferguson Auto Spring Mfg. Co., under Washington laws; authorized capital, $1,000,000. Corporators—A. B. Ferguson, F. W. Stephens and others.

Floresville, Tex.—M. A. Newman Garage Co., under Texas laws; authorized capital, $5,000; to operate a garage. Corporators—J. E. Dewees, M. A. Newman, J. H. Brown.

Terre Haute, Ind.—Engine Co. of Indiana, under Indiana laws; authorized capital, $10,000; to manufacture engines. Corporators—W. P. Childs, O. E. Childs, Omer Mader.

Philadelphia, Pa.—Automobile Development Co., under Pennsylvania laws; authorized capital, $10,000; to manufacture and deal in motor cars and all appliances thereto.

Wauwatosa, Wis.—Suburban Garage Co., under Wisconsin laws; authorized capital, $15,000; to conduct a garage. Corporators—A. D. Warren, P. G. Warren, Delinda Kirenitz.

Indianapolis, Ind.—C. A. Chambers Co., under Indiana laws; authorized capital, $5,000; to deal in motor trucks, etc. Corporators—C. A. Chambers, L. M. Chambers, A. L. Catterlin.

Edwardsville, Ill.—Edwardsville Garage & Automobile Supply Co., under Illinois laws; authorized capital, $10,000. Corporators—Thomas J. Fahnestock, Olin H. Giess, Walter P. Kriege.

Columbus, Ohio—Ohio State Automobile Association, under Ohio laws; to conduct a society for the mutual benefit of automobile owners. Corporators—Charles C. James and others.

Chicago, Ill.—Splitdorf Electrical Co., under Illinois laws; authorized capital, $25,000; to manufacture electrical appliances. Corporators—C. F. Splitdorf, A. E. Splitdorf, G. W. Kimble.

St. Louis, Mo.—Southern Motor Car Co., under Missouri laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—B. C. Quarles, J. D. Kerr, David Barth.

Fremont, Neb.—Electric Garage Co., under Nebraska laws; authorized capital, $5,000; to operate a garage. Corporators—E. M. Schurman, L. D. Wright, Rudolph Schurman, Scott Wright.

Huntington, W. Va.—Modern Garage, under West Virginia laws; authorized capital, $5,000; to operate a garage and motor car agency. Corporators—B. G. Frampton, W. D. Adams, B. G. Cain, E. M. Cain and M. V. Adams, all of Huntington.

Toledo, Ohio—Automobile Distributing Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—W. G. Kirkbrige, L. M. True, J. L. Bayless, N. L. Bayless, D. W. Parker.

Marion, Ohio—Marion Motor Car Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—G. D. Copeland, G. H. Schofield, N. B. Durfe, W. M. Schofield, John W. Thew.

Pharr, Tex.—Rio Grande Auto Inn, under Texas laws; authorized capital, $10,000; to conduct a general livery and transfer business. Corporators—A. J. McCall, Jackson, Mo.; H. F. Best and G. E. Gage of Pharr.

Kansas City, Mo.—Auto Salvage Co., under Missouri laws; authorized capital, $15,000; to equip a shop for the repair and rebuilding of automobiles. Corporators—Claud S. and B. G. Peck, W. R. Chamberlain.

Toronto, Ont. — Amalgamated Motors, Ltd., under Canadian laws; authorized capital, $1,000,000; to engage in business as manufacturers, founders and engineers. Corporators—J. F. Selby, W. H. Smith, T. O. Pardoe.

Connersville, Ind.—McFarlan Motor Co., under Indiana laws; authorized capital, $100,000; to manufacture and sell motor cars. Corporators—Alfred H. McFarlan, Burton M. Barrows, Edward W. Cotton and others.

Toledo, Ohio—Jefferson Avenue Gasolene & Supply Station, under Ohio laws; authorized capital, $1,000; to conduct a gasolene supply station. Corporators—J. A. Ewing, R. W. Bowers, Richard D. gan and others.

Detroit, Mich.—Detroit Turbine Mfg. under Michigan laws; authorized capi $50,000; to manufacture steam turbir gasolene engines and accessories. Corpo tors—Peter H. F. Spies, James F. Myl George E. Gowing.

New York, N. Y.—Bayart & Messard under New York laws; authorized capi $5,000; to operate a garage. Corporat —John C. Oldmixen, 35 Nassau street; gene Messard and Charles Bayart, both 309 West 66th street.

Brooklyn, N. Y.—Brooklyn Broadw Garage, under New York laws; authoriz capital, $5,000. Corporators — William Baur, 1181 East 39th street; Otto Clau ner, 1729 West 9th street; Jacob Schmi 36 South Oxford street.

Cushing, Okla.—Cushing Gasolene C under Oklahoma laws; authorized capit $200,000; to equip a plant for the manufa ture of gasolene. Corporators—Ray Jones and C. F. Hillman, of Cushing; Fra Brown, Independence, Kan.

Richmond, N. Y.—Richmond Auto Po Club Co., under New York laws; authoriz capital, $2,000; to promote auto polo. Co porators—John Milnes, Port Richmon Charles B. Dullea and Martin E. Hanso both of West New Brighton.

New York, N. Y.—Stuyvesant Au Trading Co., under New York laws; autho ized capital, $12,000. Corporators—Simc Klein, 308 East Houston street; Josep Goldstein, 413 East 25th street; Berth Steinhardt, 224 East 9th street.

New York, N. Y.—Progressive Taxica Co., under New York laws; authorize capital, $500. Corporators—Harry Acke man, 158 West 96th street; Arthu Schwartz, 126 West 98th street; Benjami Ackerman, 14 West 98th street.

Cleveland, Ohio—Standard Auto Equip ment Co., under Ohio laws; authorized cap ital, $10,000; to conduct a general moto vehicle business. Corporators—Worthing ton Hough, Edward Davis, James Arm strong, P. J. Nutley, F. W. Gillette.

New York, N. Y.—Lent Motor Fire En gine Corporation, under New York laws authorized capital, $250,000; to sell pro pelled fire engines. Corporators—W. R

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Fuller, 2 Rector street; Oscar J. Heig, and I. Vernon Weisbrod, both of 71 Broadway.

New York, N. Y.—Nichols Tire & Rubber Co., under New York laws; authorized capital, $5,000. Corporators—James C. Nichols, 67 Franklin avenue, New Rochelle; William B. Hughes, 879 West End avenue; David L. Fults, 2112 Beverly road, Brooklyn.

New York, N. Y.—Phelps Motor Car Corporation, under New York laws; authorized capital, $50,000. Corporators—Frederic L. Sanford, 432 East 5th street, Mount Vernon; Ernest H. Craw, 26 Highland avenue, Yonkers; Harold A. Biggs, 220 West 98th street.

New York, N. Y.—Sharrer Patent Top Co., under New York laws; authorized capital, $25,000; to manufacture tops for motor cars, motor boats, etc. Corporators—Elias B. Hart, 35 Pearl street; Jacob M. Sharrer, 168 Eighth avenue; Paul McCoy, 128 Broadway.

New York, N. Y.—Automobile Engine Tester Co., under New York laws; authorized capital, $25,000; to manufacture automobile engine testers. Corporators—Robert Corin, 1492 Broadway; Samuel Mirbach, Elm avenue, Mt. Vernon; Isaac M. Cohen, Hotel McAlpin.

New York, N. Y.—Packard Exchange, Inc., under New York laws; authorized capital, $500; to engage in general motor vehicle business. Corporators—Louis G. Duguet, 107 West 36th street; Thomas F. MacMahon and Lionel E. Lawrence, both of 1402 Broadway.

New York, N. Y.—Auto Dealers' Outlet Co., under New York laws; authorized capital, $10,000; to deal in second-hand motor cars, etc. Corporators—Fremont D. Palmer, Eltingville, S. I.; Lester E. Schwartz, 435 Convent avenue; Herbert D. Palmer, 954 East 173rd street.

New York, N. Y.—Automobile Manual Publishing Corporation, under New York laws; authorized capital, $1,000. Corporators—David M. Steindler, 42 Broadway; Herbert Goldsmith, 330 Belmont avenue, Newark, N. J.; George Holland, 1537 50th street, New York.

New York, N. Y.—Premier Auto Novelty Mfg. Co., under New York laws; authorized capital, $15,000; to deal in automobile accessories, etc. Corporators—Charles Wieland, 194 Riverside Drive; Hyman Cohen, 952 39th street, Brooklyn; Harry G. Kosch, Putnam avenue, White Plains.

Poughkeepsie, N. Y.—Warm-Hand Steering Wheel Corporation, under New York laws; authorized capital, $150,000; to manufacture steering wheels for motor cars. Corporators—Grant E. Smith, 18 Hooker avenue; Walter S. Barton and Josiah C. Barton, 1324 73rd street, Brooklyn.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

G. F. McCurdy has been appointed sales manager of the Westcott Motor Car Co., of Richmond, Ind .

F. R. Pendleton has been appointed eastern sales representative of the Thomas Motor Car Co., of Detroit, maker of the Thomas truck. Previously he was with the General Motors Co.

F. L. Semple has been appointed sales manager of the Wagner Oil Co., of New York. Previously he served the Havoline Oil Co. in a similar capacity.

W. E. Raiguel, its sales manager, has been elected secretary of the Disco Co., of Detroit, to fill the vacancy caused by the resignation of George B. Sweet.

Edward Copeland has been appointed general manager of the Corcoran Lamp Co., of Cincinnati. Previously he was purchasing agent of the General Motors Co.

A. L. McLeod, of Chicago, who for 18 years was with Charles Scribners' Sons, has joined the staff of the Jeffery-Dewitt Co., of Detroit. He will have general charge of the company's porcelain sales.

Fred A. Cornell, former sales manager of the Willys-Overland Co., has been added to the sales staff of the Splitdorf Electrical Co., of Newark. In addition to his Overland experience, Cornell also has served with the Timken Roller Bearing Co.

C. C. Bradford, former manager of the Cleveland branch of the United States Lighting & Heating Co., has been promoted to the post of sales manager of the company with offices at 30 Church street, New York City. The vacancy in Cleveland has been filled by the appointment of R. B. Clark as acting manager.

W. B. Fewell, who relinquished the management of the Oakland Motor Car Co.'s New York branch when it was taken over by the Sidney B. Bowman Automobile Co., has been appointed manager of the Oakland branch in Boston. He is no stranger to that vicinity, having been at one time manager of the Olds establishment in that city.

Walter I. Jordan, former manager of the Detroit branch of the Hoffecker Speedometer Co., has joined the staff of the Empire Automobile Co., of Indianapolis. He will serve as assistant to Commercial Manager Hood but will spend most of his time on the road.

Minor Business Troubles.

The Morse-Readio Co., of Springfield, Mass., a garage operator and dealer, has assigned to Frederick J. Hillman of the New England Auditing Co. The liabilities are $34,500 and the assets $47,295. Nearly all of the indebtedness is secured. The reason for the assignment is said to be the discontinuance of the manufacture of Alco cars, which it handled.

Dr. B. D. Bundy has been appointed receiver for the Crescent Motor Truck Co, of Middletown, Ohio, which was organized about a year ago but which cut little figure in the industry. The petitioning creditors allege that the company is heavily in debt and constantly losing money and they, therefore, pray that the assets be sold and the proceeds applied to the indebtedness.

The Omaha Motor Car Co., of 4311 North 20th street, Omaha, Neb., which set out to manufacture the Omaha car but did not make many of them, has filed a petition in bankruptcy; the liabilities are $46,908 and the assets $10,140, consisting of six finished cars, several unfinished cars, tools and office furniture. Among the creditors are: Walter Moise, $29,380, money loaned; the W. L. Huffman Co., $8,000; State Bank of Omaha, $5,000, on a promissory note. E. E. Howell is the company's president.

Recent Losses by Fire.

Arctic, R. I.—Lewis Bentley; garage destroyed. Loss, $1,800.

Red Bank, N. J.—L. C. de Covet; garage and stable destroyed. Loss, $25,000.

Flint, Mich.—Automobile Exchange, 514 North Saginaw street; building destroyed. Loss, $5,000.

Boston, Mass.—Cambridge Electric Light Co., Western avenue; garage destroyed. Loss, $6,000.

New Orleans, La.—H. W. Johns-Manville Co.; building damaged. Loss, building, $20,000; contents, $55,000.

South Deerfield, Mass.—Fisher's Garage; garage and one car damaged and $300 worth of tires destroyed. Loss not stated.

Output Sold, Benson Predicts Bigger Year.

The Studebaker output for next year has been entirely contracted for, according to a public announcement of Sales Manager Benson. In making the statement, and as a result of his recent swing around the trade circle, Benson couples with it the prediction that the year 1914 will be even better than is the present twelvemonth from the standpoint of sales of Studebaker automobiles.

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In the RETAIL WORLD

R. Boermer, of Thiensville, Wis., is about to build a garage.

W. H. Knarr is erecting a garage in Beloit, Wis. It will cost $8,000.

J. J. Fairchild, of Turlock, Cal., has secured permission to erect a garage.

Jesse Kirby, of Smith's Grove, Ky., is erecting a garage and machine-shop.

The Wood Auto & Machine Co., of Carrollton, Ky., is erecting a new shop building.

Stewart Dorsey, of Carlisle, Ky., has broken ground for a garage and machine-shop.

C. N. Harp, of Syracuse, N. Y., will erect a garage at Sylvan Beach, in the same State.

Thomas Maddock, of Superior, Wis., has commenced the construction of a garage; it will cost $9,000.

Charles Springer is erecting a garage in Wheeling, W. Va. It is located at 85 16th street, East End.

The Biggs-Brown Oil Co., of St. Louis, has secured new quarters; they are located at 500 Theresa avenue.

Barr Bros., of Ulrichsville, O., plan to erect a new garage; their former building was destroyed by fire.

F. C. Arnold has purchased a half-interest in the Stockton (Cal.) Garage; Capt. Jensen formerly was sole proprietor.

Roy Brown, of Wilmington, O., has sold his garage to H. D. Pennington; the style of the business is Brown's Garage.

Philbrick, Mather & Co., of Baraboo, Wis., have purchased the garage and business of the Square Deal Auto Co.

The Anselm Ganahl Motor Car Co., of St. Louis, has leased new salesrooms at 1512 Locust street; the company handles Regals.

Asire & Palmer, of Marquette, Mich., have taken possession of new salesrooms; they are located in the new Colonial building.

The Quinn & Clark Motor Co., of Westfield, Wis., has broken ground for a garage, to cost $9,000; the company handles Fords.

Isaac R. Wilson, of Madison, N. J., has opened a garage on King's road; he also has admitted Walter S. R. Schultz to partnership.

George Schuback, of Logansport, Ind., is about to open a garage; he has leased a building just erected on Front street by Elliott Uhl.

John B. Shea, of Holyoke, Mass., is about to enter the garage trade; he has purchased and will remodel a building at Dwight and Elm streets.

W. B. Hall, J. H. Ward and R. W. Eddleman are erecting a fireproof garage in Du Quoin, Ill. Hall is also engaged in the rea. estate business.

Fred and Roy Roff and Jacob Thompson, of Spirit Lake, Ia., have secured plans for a new garage; it will stand on the site of the Chisholm building.

Thomas F. Morris, Jr., has entered the trade in Birmingham, Ala. He styles his business the Automobile Exchange and will specialize in used cars.

Ben Braham, of Kellogg, Ida., plans to erect a garage; he has secured a site on McKinley avenue and estimates that the building will cost $7,000.

E. A. Brandes, of Grand Island, Neb., has sold his garage to John C. Thompson, formerly of Edgar, in the same State; Thompson will operate it.

The Clinton Garage, of Wilmington, O., has sold its business, on Mulberry street, to the Wilmington Auto Co. The latter is a new concern and will handle Buick cars.

T. F. O'Laughlin, of Hartford, Conn., has been granted authority to build a two-story garage at 18 Park street; the application states that the cost will be $12,000.

The Hill Top Motor Car Co., of Cincinnati, has taken possession of new salesrooms at 960 East McMillan street; Goldberg & Phister are proprietors of the company.

Herbert H. Hewitt plans to enter business in Peoria, Ill., under the style Franklin Square Garage; he has secured a site on Fulton street and will expend $12,000 on the building.

The Overland Automobile Co., of St. Louis, has found it necessary to secure additional warehouse space; it has leased a one-story building, 100 x 100 feet, at 436-44 Theresa avenue.

J. P. Wise has opened a garage in Hazlehurst, Miss.; he also stocks accessories and Ford cars. He is the head of the J. P. Wise Mercantile Co., dealer in general merchandise.

The City Taxi Co. has been formed in Helena, Mont. Its equipment consists of two Case limousines and a touring car; Jacob Fisher, formerly with the Helena Cab Co., is manager.

W. W. Wood has taken over the Cedar Falls Garage Co. in Cedar Falls, Ia. W. H. Laing, the former proprietor, has left for the East and plans to reenter business in Baltimore or Hagerstown, Md.

The Southern Motor Car Co. has entered the trade in St. Louis; it has leased salesrooms at 306-8 North 12th street and will handle Haynes and Metz cars. J. D. Barth and B. C. Charles constitute the company.

Don Lee, Cadillac distributer in California, has opened a branch in Bakersfield; Walter Beall has been made manager. Lee, whose headquarters are in San Francisco, has other branches in Los Angeles, Sacramento and Pasadena.

The Automobile Distributing Co. has been formed in Toledo, O., with J. L. Bayless as manager; a location has been secured at 1011 Jefferson avenue. The company will act as a wholesale distributer of Regals in 18 northwestern Ohio counties.

W. F. Garnell and Charles Wegman, of Cumberland, Md., have formed the Automobile Repair Co., and have opened a repair-shop and garage at Front and Frederick streets; Garnell formerly was chief mechanic at Glissan's Garage, in that city.

Frank L. Mitchell, treasurer of the Mitchell-Lewis Motor Co., of Racine, Wis., and Otis C. Friend, its sales manager, have organized the Mitchell-Lewis Co., of Racine, Wis., with $10,000 capital. William H. Armstrong, assistant secretary of the company, also is a corporator.

The Bluff City Welding Co. has entered the trade in Memphis, Tenn., at 419 South 2nd street; it employs 20 mechanics and is especially equipped for automobile repair work. The officers of the company are: President, Frank F. Fransioli; vice-president, Thomas E. Hubley; superintendent and manager, E. C. Ellingwood.

A. V. Davis and L. A. Hannan have formed the West Coast Puncturine Supply

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Co. in Los Angeles and have located at 1351 South Main street; they will market Puncturine, a puncture repair compound. Hannan formerly was sales manager of the United Motors Co. in that city.

Hanselman & Dye Garage is the style of a new business in Sheridan, Mo. The company, which is capitalized at $1,000, will operate a garage, machine-shop and supply store in a building 45 x 80 feet. S. E. Hanselman, one of the proprietors, formerly was engaged in the trade in Waterloo, Ia.

The Chester Motor Car Co., of Nashville, Tenn., has secured permission to erect a two-story and basement garage, 50 x 169 feet, at 11th avenue and McGavock street; the exterior will be of pressed brick with stone trimmings and the showroom will have a front and partitions of plate glass. The structure will cost $15,000.

B. M. Calkins, formerly of Sycamore, Ill., and J. W. Murphy have formed the Calkins-Murphy Motor Co. and have taken over the business of the Mulick Motor Co., in Fargo, N. D. They have leased the Hector Barnes Garage, formerly occupied by the Northern Auto Co., and will handle Paige and Studebaker cars. The Northern Auto Co. will engage in the livery business.

E. Van Loo, of Waupun, Wis., has sold his garage at Main and Fond du Lac streets to E. A. Marsh, who has leased it to William Whiting, who will continue the business. The purchase price was $6,500. Whiting has conducted a garage and livery near the Van Loo Garage and will consolidate his interests in the latter location. Van Loo's retirement is occasioned by ill health.

The City Auto Corporation, of Pulask., Va., which recently incorporated, is erecting a garage, 50 x 121 feet, at 124-6 1st street northeast; it will house from 80 to 100 cars. The officers are: President, S. M. Lyon; vice-president and general manager, W. H. Wysor; secretary and treasurer, R. L. Gardner. The company has the Cadillac, Hupmobile and Ford agencies and will stock supplies and accessories. Wysor is but 17 years old.

R. A. Schwarzburg and J. J. Mack have formed the Schwarzburg-Mack Auto Co. in Milwaukee, Wis., and will handle the retail business in that city of the Creek Motor Sales Co., distributer of Oakland, Empire and King cars. The new company will have its salesrooms with the Creek company, which now is located at 228-32 Wisconsin street, but which will take possession October 15 of a new garage and service station at 447-49 Jackson street.

The Franklin Motor Car Co. of Boston has consolidated its sales and service departments, formerly located, respectively, at 733 Boylston street and 31 Irvington street, in a new building at 616 Commonwealth avenue; the company also has taken over the Harmon Automobile Co., of 24-30 Forest avenue, Portland, Me., and will make it a Franklin distributing point with William Chellis, formerly a Harmon salesman, as manager. The Harmon company formerly handled Franklins and has one of the largest and best equipped garages in Maine.

New Men and More Capital in Simplex.

At the annual meeting of the Simplex Automobile Co., of New York City, held last week, the capital stock of the company was increased from $1,000,000 to $1,500,000 and several changes were made in the officers of the corporation. Henry Lockhart, Jr., of Goodrich, Lockhart & Smith, New York bankers, succeeded C. T. Neubourg as president, and from the same financial concern C. C. Goodrich and J. Hopkins Smith, Jr., entered the board of directors. Besides Lockhart, the officers are: First vice-president, Otto Boessneck; second vice-president, J. Hopkins Smith, Jr.; secretary and treasurer, C. T. Neubourg. The directors include the officers and Hobart J. Park, G. L. Lansing, Robert Behr, John G. Dale, G. E. Franquist, C. C. Goodrich and Hugo Boessneck. Henry Broesel has been made service manager and Fred J. Titus, formerly with the Alco, manager of agencies. A new factory which the company recently erected at New Brunswick, N. J., will permit an increased production.

Grossman Removes to Brooklyn.

The Emil Grossman Co., which October 24 will become the Emil Grossman Mfg. Co., Inc., has consolidated the plants it formerly operated in New York, at 250 West 54th street, and in Detroit, at 844 Woodward avenue, in one of the Bush Terminal buildings in Brooklyn, at 41st street and 2nd avenue; the company occupies one floor, of 31,000 square feet. The new location affords, among other things, much better shipping facilities.

The Detroit location will be continued as a western branch. The company also has a porcelain plant of three kilns in Trenton, N. J. The company is probably best known as the manufacturer of Red Head spark plugs, although its line includes other automobile supplies and accessories.

Bay State Bars Several "Dead Ones."

For failure to file tax returns, as required by law, the Massachusetts Supreme Court has issued injunctions against the following concerns: Berkshire Motors Co., Consumers' Auto League, Inc., Fenway Auto-Top Co., Grant Motor Truck Co., Norwalk Motor Car Co. of New England, Stahle Mechanical Tire Co., United States Motor Vehicle Association, Inc., Expansion Spring & Rim Co. and the 35% Automobile Supply Co., practically all of whom have either failed or ceased to do business in that State. The injunction forbids any of them doing business in Massachusetts until they file the required report.

Misrepresented Himself as a Dealer.

C. E. Townsend, of Nash county, N. C. has been apprehended in Virginia on a charge of having secured money under the pretense that he was manager of the Norfolk Motor Car Co., of Norfolk, Va. It is charged that J. D. Bullock, of Nash county, paid to Townsend $250 with the understanding that he was to be a Brush dealer and would be sold ten cars at a discount of 15 per cent.

New York Jobbing House to Dissolve.

The Progressive Cycle & Automobile Co., of which Alexander Scaison is secretary and manager, and which has been doing business for some 10 years at 81 Chambers street, New York, is to be dissolved. A special meeting for the purpose has been called to occur on October 22nd.

Fiat Oils Absorbed by Rival Monogram.

The Pennsylvania Oil Works Co., with headquarters at 72 Front street, New York has been taken over by the New York Lubricating Oil Co. The latter will continue the Pennsylvania brand of Fiat oils, which will be marketed in connection with the Monogram lubricants.

Bigger Factory for Champion Plugs.

The Champion Spark Plug Co., of Toledo, Ohio, has let contracts for the erection of a new factory at Avondale and Upton avenues, in that city. It will be a four-story concrete structure, 60 x 120 feet, and will cost approximately $24,000.

Rubber Company Goes into Lubricants.

The W. D. Newerf Rubber Co., of San Francisco and Los Angeles, has secured the Pacific Coast representation for the full line of Invader lubricants. It will control their distribution in the States of California, Nevada, Utah and Arizona.

Paxson to Market Ohio Car Output.

C. D. Paxson, of Cleveland, who is marketing the output of Cleveland trucks, has also added to his account the Ohio cars made by the Crescent Motor Co., of Cincinnati. He will have entire charge of the company's product and sales.

Jiffy's President to Seek Health Abroad.

In an effort to restore his health, Frank Isle, president of the Jiffy Auto Curtain Co. of Detroit, is preparing to sail to Europe. He will be absent about four months.

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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DO MAKERS HEED THE DEALER'S VOICE?

It would appear a fairly safe surmise that putting to dealers the question, "What can the manufacturer do for the dealer?" would bring the quick and fairly general response, "Give him a larger discount."

It, therefore, must have proved more or less surprising to at least most of those who have followed the series of interviews, printed in Motor World, which hinged on that question, that none of the dealers who have expressed opinions has even mentioned the word discount. It must prove equally surprising that, despite the comparatively mature age of the industry, and the fairly general practice of calling dealers into annual conferences, so many of them agree that their views have no weight, or, at any rate, so little weight.

This appears to be one of the chief burdens of complaint, which, in several instances, proves how widely divergent are the opinions of manufacturers and dealers on even such a subject as what constitutes the most desirable equipment or appointments, or whatever else those conveniences, or necessities, may be termed.

The dealer whose views are quoted elsewhere in this issue makes a strong and reasonable presentation of the dealer's case. He gives the engineer his due and evinces no disposition to project himself into engineering problems but, like nearly all of the other dealers previously interviewed, he regrets that the manufacturer so little heeds the dealer's voice. Being on the firing line, that is, in close and constant touch with the actual purchasers of cars, the dealers all believe they are competent to say what factors or features are of most influence in promoting or effecting sales, and that there is merit in the assertion none will gainsay.

The substance of the dealers' expressed opinions is largely a reiteration of the time-worn belief that "it is the little things that count," and all who have followed the salesmen's articles which have appeared, and are appearing, in Motor World's "Best Sale" competition, cannot but be impressed by the comparative trifles which so often weigh for or against a sale. While it is not possible to please everyone, Motor World's interviews go far to prove that there still remains room for more complete understanding between those who produce automobiles and those who sell them. How this understanding may be reached has been abundantly indicated by the interviews themselves.

LOGICAL SUBSTITUTE FOR LOCAL SHOWS.

"While little minds discuss, great questions solve themselves," is a saying old but true, which is another way of remarking that indications are not lacking that the National show situation appears to be rapidly solving itself.

It is fairly plain that the local show is perhaps less rapidly but none the less surely ceasing to be one of the greatest questions of the industry. Those who promote them have come to realize, or are being brought to a realization, that local shows are exactly what the term implies, shows of and by local dealers for local residents, and with the realization has come a lessening of the number of such affairs.

There are reasons to believe that if, in some cases, the dealers themselves did not personally share in the proceeds of such exhibitions, and were less impressed by the thought that they should be social functions, their number would be decreased still further and more rapidly. As for the free-lance exhibitions promoted by professional promoters, an end will be put to them whenever dealers realize that such promoters merely use them as "good things" and learn to answer with an emphatic "No" when the tempter casts his hook.

It is a fair assertion also that the whole local show question would be and can be answered, and be answered to better purpose, by exhibits of automobiles at the annual State or county fairs. There have been many such displays, and there should be more of them. They take the place of the present form of local show. Most of those who attend the so-called State or county fairs do so for the specific purpose of seeing whatever may be displayed, and usually their purpose is an earnest one. They care nothing for clothes or "society" and are in the mood to be shown and to be impressed.

If the truth were known, it probably would be found that more genuine prospects are obtainable at a county fair than at any local show that ever was or may be held. The most should be made of such displays.

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"RED LIGHT" MEANS GARAGE IN TOWN OF WAR TIME FAME

Winchester's City Fathers Order Red Flag by Day and Red Lantern by Night at Garage Door—Other Results of Deliberations.

If Gen. "Phil" Sheridan were to repeat to-day his wild ride from Winchester, Va., down the Shenandoah Valley, he very likely would do it with his muffler cutout open and he would not have to hunt aimlessly for a garage from which to rent a car, for hereafter, according to an ordinance just passed in the village of historic and poetic fame, every garage must be marked in the daytime by a red flag and at night by a red lantern or some other kind of light—but it must be red.

Winchester has a population of 5,864, according to statistics, and the same authority accredits it with a couple of express offices, a money order post office, a telegraph station and a couple of railroads; more recent information is to the effect that the town also has a Common Council of ten members, and the council placed itself in modern history last week by adopting a garage ordinance.

Just because the town is not of metropolitan proportions is no indication that the ordinance was an inconsequential task—it was not. The debate attending its adoption was warm. One member of this law-making body proposed that every man who wishes to open a garage make application in writing and that the notice of the application be printed something like ten times in a newspaper in order that all objectors might be on hand to object. J. M. Steck was the father of that amendment, but Councilman L. F. Cooper went him one better and suggested that every prospective garageman get the consent of two-thirds of the people in his immediate territory; but the council decided that if this were made mandatory there wouldn't be any garages at all, for, they agreed, "the business is legitimate." Having conceded that the business has a right to exist, the law makers proceeded to explain how it might be operated.

After compiling a young book of rules on fireproofing and such things, the councilmen inserted in it the red lantern clause and, moreover, provided that no unnecessary noise shall be made at any time and that none at all shall be made between midnight and 6 A. M. and no unnecessary work performed on Sunday. No repairs shall be made outside the garage unless it be for the purpose of getting a crippled car in shape to be run into the garage, and no car shall stand in front of a garage for more than 20 minutes at a time.

Also, if a gasolene tank is to be filled it must be through a hose and not from a pail if the car is outside the garage in the street. Previous to crossing the sidewalk, entering or leaving a garage, a car must top and signal its approach. Every violation means a fine of from $5 to $25 and every day of violation is a separate offense. As a climax to the session, someone presented a petition. The spectators held their breath, but for no cause, for the paper was signed by people living near the Huntsberry Garage, on South Main street, saying they did not object to the garage. The council wiped its brow and adjourned.

New York Garagemen Reelect Officers.

Whereas the immediate object of the New York Garage Association, when it was formed a year ago, was a reduction in the price of gasolene, the association still continues as an effective working trade organization and last week entered upon its second year with an election of officers; the old roster was reelected, as follows: President, Louis J. Joscelyn, of the Joscelyn Garage; vice-president, William Burrows, of the Niagara Livery & Motor Car Co.; treasurer, George H. Reaney, of the Riverside Garage Co.; secretary, C. H. Potter, of the Uptown Garage.

The plans for the coming year include the contesting to a conclusion of New York City's ordinance which requires the installation of a gasolene separator, the formation of a credit list and the adjustment of gasolene and storage charges to a more consistent and profit-paying basis. The separator matter is now on its way through the New York Court of Appeals.

Kelsey Finally Drops Three-Wheeler.

C. W. Kelsey, one of the veterans of the trade, who organized the Motorette Co. in Hartford, Conn., about three years ago, and who acquired certain of its property after the company failed last year, has abandoned his efforts to reestablish the enterprise. Originally the Motorette was a three-wheeled "gas" driven vehicle, but quite recently Kelsey applied an electric motor to it and was proceeding along that line when he encountered obstacles which were too great to be overcome.

Bring Chicago Manager Back from London.

Extradition papers have been signed in the case of Albert Victor Webb, who was arrested in London, Eng., several weeks ago on the charge of having stolen $3,600 from the American Auto Supply Co., of Chicago. Webb was in charge of the Chicago company until May 31 when, it is alleged, he decamped with the funds in question.



*Indicates Sanction by A. A. A.

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.*

Oct. 4, Trenton, N. J.—Inter-State Fair Association's track racemeet.*

Oct. 4, Fresno, Cal.—Fresno County Agricultural Society's track racemeet.*

Oct. 4, St. Louis, Mo.—Automobile Club of St. Louis's reliability tour.*

Oct. 6-11, St. Louis, Mo.—Automobile show in Forest Park Highlands.

Oct. 7-8, Hutchinson, Kan.—Track racemeet under auspices of Kansas State Automobile Association.

Oct. 11, Springfield, Ill.—State Board of Agriculture's track racemeet.*

Oct. 17-27, Paris, France—Annual automobile salon.

Oct. 18-19, St. Louis, Mo.—Track racemeet under auspices of J. A. Sloan.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-15, London, England—Annual British Automobile show.

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Nov. 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

Nov. 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile club.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

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HOW CAN THE MANUFACTURER HELP THE DEALER

By Consulting the Retailer on Appearance and Appointments—Harry Houpt Tells Why an Engineer Can Not Select, for Instance, a Carpet for a Prospect of the Wealthy Class.

"The public wants it that way," said the dealer.

"But I've spent years developing it this way," answered the engineer.

"It's good enough this way; the public ought to have it this way," decided the general manager, "therefore, let it be this way."

"Very well," replied the dealer. "Anyway, I suppose it makes me a more efficient salesman to have to sell people something they don't want."

What percentage of manufacturers in the trade follows such a course of procedure in turning out cars is problematical, but when Harry S. Houpt, one of the leading dealers in the metropolis, was asked, "What can the manufacturer do for the dealer?" his answer was aimed at the correction of such a policy; his answer embodied a whole principle rather than a mere correction of some detail of business.

Knows Car Maker's and Seller's Views.

Houpt is well qualified to discuss the problem in any phase, for he has been connected with the automobile trade from the viewpoints of both manufacturer and dealer. He has served as sales manager for a manufacturer and is now retailing cars as Harry S. Houpt, Inc. Neither does it mean that he is dissatisfied with his present connection, for the busy air about his establishment at Broadway and West 56th street is seldom found in a losing house. The answer is the summary of impressions gained in his entire experience with making and selling cars. Briefly expressed, it is: "Build from the standpoint of the dealer, not alone from that of the engineer."

"When you ask what the manufacturer can do to help the dealer you are putting a difficult question," said Houpt. "It is something a man does not always like to talk about for fear someone will think he is talking anonymously about the manufacturer whose cars he handles; but without hitting at anyone in particular, I believe I can make an answer to the question that will cover the situation in more than one factory. It may be said to be a condition which has grown up with the automobile business and one which, in my estimation, could easily be corrected and with great advantage to both manufacturer and dealer.

"The condition to which I refer is not one of the mere retailing of cars, but goes back farther than that; it goes away back to the beginning of the manufacturing process. I believe the manufacturer could best serve the dealer by having the engineer confine his attention to and exercise his authority in the construction of the chassis—and no more.

Engineer Most Capable in His Field.

"The engineer is well qualified to handle the intricate problems which are met in the production of a satisfactory chassis, and it is a field in which his ability can be used to greatest advantage. A good motor, a good transmission and other good parts of the lower half of a car can be produced only through excellent technical knowledge. A salesman very likely would achieve very unsatisfactory results if it were left to him to select the steel which was to be used in a motor or the amount of piston clearance that was to be allowed. That is something the salesman can talk about after it is done but generally would prefer to steer clear of beforehand.

"If the engineer decides that a stroke of 4½ inches is best, it is safe to assume that experimentation has led to that conclusion, and if the motor works satisfactorily the salesman can sell it. But—there are other things besides a chassis which sell a car. The average prospect of to-day, especially the prospect who buys one of the higher-priced cars, looks very much to the appearance of the vehicle and to its comfort, finish and appointments. On these points, it is my belief, the manufacturer should harken to the dealer.

Giving Demonstration to Mrs. Montague.

"Let us imagine a car in which there is a cheap carpet; the engineer may have put every effort into perfecting a chassis, and when it came to the body may have decided that the cheap carpet was good enough. Therefore, it went in. But now let us follow the car after it gets into the hands of the dealer.

"The dealer goes out to give Mrs. Montague a demonstration. Mrs. Montague has spent an hour or two in the hands of her maid. She has dressed from the skin out in the finest apparel, her hair has been coiffured in the latest mode and every detail of her outfit is perfect. She moves tow the door of her luxurious apartment, ric carpeted and where everything is in best taste and harmony. Outside the d is a uniformed hall attendant at attenti she enters a mirrored elevator run by a u formed operator. The street door is ope by another uniformed man, and she wa to the car over an expensive carpet. H shoe never even touches the sidewalk.

"She steps into the car, and the first th she notices is that cheap piece of carp Maybe the edge of the upholstery is tac instead of stitched; she hasn't a piece furniture in her house with such a fin as that. The upholstery may not be o very high quality. Perhaps the looks of t car do not appeal to her. Numerous lit things like that may be all out of acc with the things which are a part of t life she leads. The motor may purr ever silently, the car may glide ever so smooth the accessory equipment may be comple but she doesn't care for it at all.

Mechanical Man Can't Understand It.

"The dealer tells the general manager the factory that the car doesn't suit the cla of trade for which it was built. The ge eral manager takes the message to the e gineer. The engineer says, 'Hm-m-m-m That's funny! I can't understand it. I ha spent years in developing that car to i present perfection. I regard it as the mo nearly perfect car that ever went out this factory. I can't understand it.' An the engineer is right, so far as he goes. is the most nearly perfect car that ev went out of the factory—from an enginee ing standpoint, but not from the dealer standpoint.

"And why? Let us go home at night wit the engineer, and we find his home void the artistic atmosphere apparent to th eye in Mrs. Montague's apartment. W do find, however, a library of technic books that the engineer would not exchang for the most beautiful Fifth avenue hom His home is comfortable and serviceabl His environments, however, are such that i his text books and experimental shop he i agreeable to invest large amounts c money; this is to satisfy his desire to in crease his knowledge of his subject, rathe than to spend needless sums of money i

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bric-a-brac and chairs of beauty without comfort.

"The man of the house may go down stairs after supper to take care of the furnace. His hands get a little dirty, but what does he care? He is a man who is accustomed to oil and grease and dirt. It's honest dirt, true; but Mrs. Montague wouldn't shake down a furnace if she froze to death. After supper the engineer may work in his private laboratory or study in his books. He may pore over a difficult factory problem at the same time that Mrs. Montague is playing bridge.

Different Lives Cause the Failing.

"Understand me, I am not holding this man up for ridicule, rather for admiration; I am not criticizing his method of living or his home; I am not holding him low in my esteem, but am merely showing the difference between him and Mrs. Montague. If one had the money and the desire he could easily become a Mrs. Montague, but desire and all the money in the world do not make an engineer. This man is a leader in his field; he is efficient as an engineer; he can turn out a piece of mechanical work that is unsurpassed, but he can't pick out a carpet for Mrs. Montague.

"And why? This man has lived in a world of a different sort. Mrs. Montague has spent years, perhaps, in her environment and is perfect in the requirements of correct living, as she understands it. An off shade in a carpet would condemn it in her eyes, and if it were not the best in its class, or something very good, she would have no use for it.

Dealer Knows What Prospect Wants.

"Now, then, how can the engineer know what Mrs. Montague wants? He can find out from the man who knows, and the man who knows is the dealer, the salesman, the man who sells the car. The dealer and salesman are in close contact with these prospects; they know what the car buyers want and do not want, wherefore I maintain that their judgment should have great weight in the building of a car, in its finish and appointments. It is not a question of the manufacturer spending more money on the cars but of spending what he does spend so it will mean its greatest value and bring the greatest return.

"Were I the general manager, and the Chicago dealer objected to the carpet—or maybe I would investigate before a complaint was made—I would ask the dealers in New York, Boston, Philadelphia and San Francisco whether they thought that carpet satisfactory. If the dealers in New York, Boston and San Francisco said they had no fault to find with it, but if the Philadelphia dealer said he didn't think it just the right thing, the manager then could present the views of the objecting dealers to those who said they were satisfied and see if they still preferred the carpet used or had merely overlooked its low quality. If the other dealers then said they were inclined to agree with the objecting dealers it would seem advisable to make the change.

"I've been talking all the time about a piece of carpet, but the piece of carpet is only an illustration. Almost any other thing might be taken as an example. The idea I have tried to express is that while the mechanical men of a factory are efficient in mechanical work and should have undisputed sway there, they are not so capable when it comes to fitting up a car which is to be sold to the class of buyers for which it was intended.

Composite Picture the Proper Car.

"This applies most aptly to cars of the higher prices, but, in a measure, it fits cars of lower price. Perhaps a manufacturer is turning out a car for $1,500 and the engineers have put in one or two things to which the selling department takes exception. Maybe to change them would make no appreciable difference in the cost. In that case the acceptance of the advice of the dealer would be a wise move on the part of the manufacturer. In any car, my belief is that when it comes to looks, finish and appointments the dealers should be consulted.

"From all of the dealers which a company has, the general manager could glean information as to what they believe is the best form in which to present the car to the public. From this information the general manager could form a composite picture of the car which would best suit the majority, and that is the car the factory should build."

Loses Ring Inside Tire He Repaired.

If this were fiction many readers would say it might be true; when presented as a fact the same readers may say it sounds like fiction, but E. L. Campbell, of Mountain View, Okla., vouches for the veracity of the story and it is entirely plausible.

Last January J. W. Bradbury, of that town, borrowed Campbell's automobile, but before he got off the main street had a blowout. He repaired the damage, but on reaching home discovered that he had lost a valuable ring from his finger. He immediately concluded he had lost it while repairing the tire and hired several small boys to shovel the snow away from the spot, but the ring failed to appear. When the snow melted a further search was made, but the ring could not be found.

A few days ago the tire blew out again, but this time Campbell was driving it. In repairing the tire Campbell felt something hard between the tube and the shoe—it was Bradbury's ring, just as good as it ever had been.

Diesel Engine Inventor Lost at Sea.

Dr. Rudolf Diesel, well known throughout the civilized world as the inventor of the internal combustion engine that bears his name, apparently was lost at sea during the night of September 29th, from a steamer plying between Antwerp and Harwich. Dr. Diesel, together with several eminent Diesel engineers, left his home in Munich, Germany, on the 29th ult., to attend the annual meeting of the Consolidated Diesel Engine Manufacturers in London, and at about 10 o'clock that night retired to his cabin on the steamer Dresden. When stewards went to aweken him the following morning he was not in his cabin nor had his berth been occupied. The idea of suicide is scouted by those who knew Dr Diesel, for no motive for such action can be ascribed. It is supposed he fell overboard during a somnambulic trance. Dr. Diesel was born in Paris in 1858, and since his engine first became a commercial possibility 14 years ago, had amassed a fortune estimated at $2,500,000. He had practically retired from active business and lived a secluded life on his Munich estate.

Washington Has Two Ways of Backing Up.

There are two ways of backing up a car in Washington, D. C. One is backing up when you want to go backwards and the other is backing up when you want to go forwards; the latter is illegal, according to an interpretation placed upon a recently adopted traffic ordinance by Police Court Justice Mullowny. The ordinance provides that a chauffeur must not back up his car when turning around, which, of course, is preliminary to going forward.

A chauffeur was arrested for backing his car along the street and was arrested under the backing-up ordinance; the judge held that if the chauffeur had been turning around when he backed up he could be held guilty, but that he could back his car on the streets all day if he so desired without violating the ordinance. Wherefore, it seems logical to assume that if a man is backing up in turning around and sees a "cop" coming, all he has to do is to keep backing up and escape arrest by the explanation that on that particular day he was driving backward.

Smith Hardware to Build a New Plant.

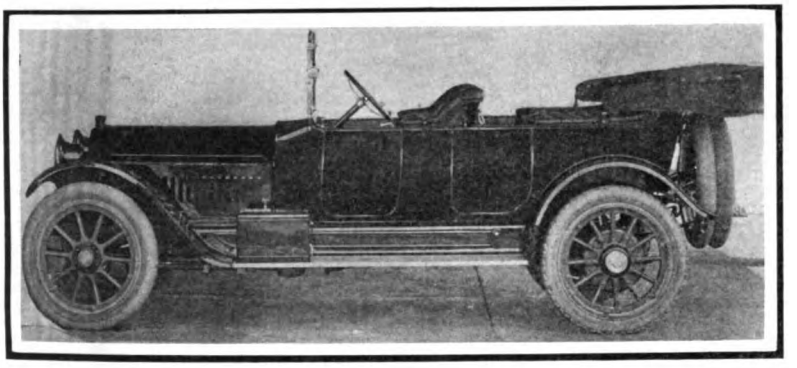
The Jos. N. Smith Co. of Detroit, which manufactures automobile hardware, has purchased a site for a new plant in that city on St. Antoin street between Hendrie and Farmer avenues. It includes approximately half a block and is valued at about $20.000.

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TWIN MUFFLERS EMPLOYED IN LATEST MODEL HOWARD "SIX"

Other Design "Wrinkles" Include New Gate Change, Spherical Accelerator Pedal and Unusual Fuel Tank —Specifications in Detail.

As a definite means to the betterment of products, there are not a few automobile manufacturers who adhere resolutely to the one-model policy, secure in the belief that to do one thing continually and to do it thoroughly is to do it well, and the Howard Motor Car Co., of Connersville, Ind., is one of them. Having decided, therefore, that it will produce a six-cylinder model, it follows that every one of them will be identical not only as regards chassis construction but in body construction as well. The single model is a five-passenger touring car that follows fairly closely the generally accepted idea of standard practice and that incorporates a number of chassis "wrinkles" that give evidence of well-thought-out design.



HOWARD "SIX" FIVE-PASSENGER MODEL IN TOURING TRIM

As regards the principal mechanical portion of the chassis, which, of course, is the motor, suffice it to state that it is a Continental; but it is a Continental that incorporates a number of improvements, not the least of which is the adoption of a double system of exhaust ports that is the idea of Chief Engineer J. C. Moore of the Howard company. By way of ensuring positive ignition of full charges of undiluted gas, Moore has worked out an exhaust system in which two manifolds, two flexible exhaust pipes and two separate mufflers are used, the theory being that by having successive cylinders in their order of firing exhausting into alternate mufflers the possibility of exhaust gas diluting the incoming charge of fresh gas is effectually obviated.

The motor itself is a standard Continental with a bore and stroke of 4⅛ inches and 5¼ inches, respectively, and it delivers 60 horsepower on the block at 1,500 revolutions a minute. Lubricating oil is forced to the main bearings by means of a plunger pump operated by an eccentric on the camshaft and cooling is effected by water circulated by a centrifugal pump driven by "silent" chain from the crankshaft. For ignition, two separate systems—a Bosch high tension magneto and an Atwater Kent system—are used and "mixture" is supplied by a model G Stromberg supplied with heated air from a special box on the exhaust manifold.

In the gear-shifting apparatus, which is placed in the center of the footboard and therefore comes at the driver's right hand, the steering gear being at the left side, another clever "wrinkle" is apparent in the form of the quadrant. The usual latch to prevent the driver inadvertently shifting into reverse is missing, and instead it requires premeditation and a distinct movement for the lever to be placed in the reverse position. The slots are curved to facilitate forward shifts, the necessary action therefore evolving into little more than a straight forward or backward movement and the side movement being obtained almost automatically. Three speeds forward and reverse are provided and by way of eliminating useless parts, the lever is mounted directly atop the gear case. Between the engine and the gearset there is a large diameter cone clutch that is fitted with 12 spring inserts beneath the leather face to induce that peculiarly soft action so much esteemed by experienced drivers. An adjustable clutch brake is fitted to facilitate gear shifting.

Skipping the gearset, there are two Spicer universal joints in the propeller shaft between the gear box and the differential mechanism and the torque reaction is taken on a triangular tube anchored in a spring cushion at a front cross frame member. The rear axle is a Timken, which is quite sufficient introduction, and the same may be said for the front axle. That they are substantial and are properly constructed with a view to producing both strength and beauty goes without saying.

Brakes and springs in the Howard "six" have been given particularly careful thought, and this is revealed in the fact that brake drums measure 15½ inches in diameter and 2½ inches across the face; both sets operate on one pair of drums. In the spring suspension, semi-elliptic members 38 inches long are used in front and in the rear three-quarter elliptic members some 52 inches in length are used. Incidentally, all spring eyes are bronze bushed and the bolts are hardened and ground.

Among the less conspicuous little things that have been worked out with an eye to the comfort of the riders and to the appeal of the car to both the dealer and the purchaser is the distinctive tire bracket at the rear. Riveted to the frame, the tire holder is designed to carry either one or two spare tires and is adjustable so that when only one is carried no support for the second is visible nor are any straps used; metal clamps take their place. The design of the accelerator pedal is another little "wrinkle" that is well worth copying. Instead of the usual device, this pedal is spherical so that either the toe, the side of the foot or the instep can be used, thus providing against fatigue in long runs. Still another clever "dodge" is the way the gasolene tank is constructed. It holds 18 gallons of fuel and the bottom is built on a slant so that when the car is tipped almost on end when climbing a grade a good head of fuel to the carburetter is ensured; the tank is beneath the driver's seat. Needless to add, with all the other fitments, a gasolene gauge has not been overlooked.

Equipment, of course, is complete, and includes an electric lighting and engine starting system in which the engine starter drives through a "silent" chain directly to the crankshaft of the engine. The lamp equipment includes head, side and tail lamps and the wiring has been carried through the lamp brackets, thus at once protecting and hiding it. The remainder of the equipment includes a Troy windshield which is built in place; a speedometer, which with lighting, ignition and starting controls is mounted on a cowl board that also hides a liberal tool storage space; Firestone demountable Q. D. rims carrying 36 x 4½ tires; silk mohair top with Jiffy curtains and dust boot; foot and robe rails, and the usual complement of tools, spare parts, etc.

Jiffy Curtain Has Moving Day.

The Jiffy Auto Curtain Co. has removed its headquarters from the Ford building, in Detroit, to the Dodge Power building in the same city. In the latter structure they occupy a large part of the fourth floor.

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CHARACTER—BUSINESS BASIS

Quality Which Is as Essential as Money in Building for the Future—The Boy Who Started With $300 and Character—and Won.

Character! What a summing up of potential force in a single word. "He has character"—that is, he stands for something definite and positive. It is a way every one of us would like to have others think and speak of us.

Ten years ago a thin, raw-boned lad came to Detroit from a small Canadian farm. He left home because he did not like farming. His business at home had been doing every sort of chore that no one else wanted to do. He did a man's work and did not draw even a boy's pay. There was absolutely no reason why he should like to stay at home.

Started Career at $3.50 a Week.

Detroit was about 100 miles away. How he got there makes no difference. Two days after his arrival he had signed an apprenticeship contract with a brass finisher and proceeded to learn the business at $3.50 a week. He was 21 years of age and a hard worker.

In six months he drew $8 a week and saved half of it. A year went by and he still got $8 every Saturday. It was not enough. He went to his employer and told him so; the employer said it was the best he could do, though records plainly showed that the young Canadian was turning out 50 per cent. more work than his companions who drew more pay. He quit the job. Then he found work at the Olds Motor Works. He learned the parts that went into a car. They moved to Lansing and he found himself without a job. He had maintained his custom of saving half his salary and loss of work did not worry him.

He had $300 in hard cash at the end of three years, besides what he would need to live on for a few weeks.

Accident had brought him in contact with a practical pattern maker. They had often talked about the opportunities for establishing a business. He was shrewd and level headed. He engaged the pattern maker to work for him at a fair salary and then rented a small place where the work could be done.

Frankness and Honesty Made Friends.

He got business right away. His frankness and his honesty made friends. He was fair to his customers and he was strict and hard with himself. He worked from six in the morning till eight and nine at night. He kept the books and collected the accounts and took care of the office and worked in the shop—and was always the first one down in the morning. He literally swept up the chips and saved pieces of wood that other shops threw away as worthless. It meant profits for him if it could be used—and it was used.

His shop grew and new employes were added from time to time. The spirit of thrift and economy did not prevent him from paying employes who were worth it, as much as, and in many cases more than, they could earn elsewhere.

His $300 Has Grown to $50,000 Business.

From that original $300 in seven years he has developed a business easily worth $50,000. He has houses and real estate. He has a wife and family. He has a model plant. He has contented workmen. He has loyal business friends. He has credit at the bank that has never been strained or abused. He has always paid cash; he has never used notes.

What is his secret? He has seen opportunities where other men saw only waste. He has devoted himself to his business. He has developed with it. Was it thrift? Was it energy? Was it luck? Yes, much of it was thrift, much of it energy, some of it the luck that follows close upon those qualities—but most of it was character.

BOOMERANGISH EFFECTS OF SUBSTITUTING "JUST-AS-GOODS"

The extra time, energy and effort put forth by many dealers to sell an inferior substitute for a standard article in order to obtain a few cents more profit is amazing, and, in many cases, ultimately destructive.

Consider for a moment the matter of dry cell batteries. A customer who had used "C" batteries and secured excellent results from them orders a set of six from his dealer. The dealer wires up six cells of another make which we shall designate "N." The customer notices this and the dealer comes back with a long argument in favor of the "N" cell, which he really knows cannot possibly give as satisfactory results.

The customer pays for the battery which in due time runs down perhaps from 30 to 60 days sooner than the "C" battery. What does the customer do? Go back to the dealer for a fresh supply of "N" cells? Not by a jug full. He goes straight to a hardware store or an electrical supply house and gets what he first wanted. The dealer by his greed drives away a customer whose purchases of other goods would more than compensate for any loss of profit on the item under consideration. He has lost the confidence of the motorist and helped to kill the goose that laid the golden egg. Do you get it?

Benefits of Printed Price Lists.

The practice of listing prices on supplies in plain, readable figures and posting the list in a conspicuous place in the garage is a good one. Dealers who sell Prest-O-Lite tanks, oils, gasolene, etc., find that the printed prices not only eliminate arguments but create confidence in the minds of purchasers. It is the old story of the one-price system that is a good thing in any business.

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AWAKE-N DISING WORLD

"THINKING" WAY TO SUCCESS

Time Set Apart for Thought Most Precious Part of Day—Sales Manager Who Is Wonder at His Work But Who Has His "Quiet Hour."

To be a successful sales manager is to fill a big job. It means hiring and firing salesmen. It means watching the whole firing line for results. It means watching expense accounts, watching territory, watching dealers, watching correspondence; it entails keeping an eye on production and on the markets; and it often includes general supervision over advertising of all kinds. And then you have only begun to list some of the things the energetic, live, buoyant sales manager must keep on his mind—must be responsible for.

In a general sense the duties are the same, whether it is for a factory or for a branch or for a distributer.

Manager Must Have Ability to Plan.

Needless to say, most sales managers are up to their necks in work all the time. It takes sales to "make the wheels go 'round."

The characteristic that marks the successful sales manager is his ability to plan. That means he must have time to think. When can he find time to do it?

A most aggressive sales manager for a concern that is conspicuously prosperous has an assistant whose duties are those of a corresponding secretary. The mail is distributed each morning as it comes in. Notes are made of the things the salesman wishes to follow up. Letters that seem to require his personal suggestions or ideas are held on his desk. The balance are turned over at once to the correspondent. Just as soon as he is ready the sales manager presses the button for the correspondent. Together they go over the letters and frame replies, which the correspondent dictates and to which he affixes the company's signature. The letters are then left on the sales manager's desk for him to look over.

From 3.30 in the afternoon till 4 o'clock he invariably follows up the different memoranda made while looking over the morning's correspondence, dropping in the shipping department to let them know by a few judicious inquiries that he is keeping close tab on them. From 4 till 5 he can be usually found at his desk with a pencil and pad. He seems to be looking out of the window. In reality he is doing some hard thinking.

Sets Aside Last Hour of Day to Think.

Each day this hour is resolutely set aside for that purpose and nothing is allowed to interfere. It is then that plans are made and decisions arrived at. At 5 o'clock the pencil and paper go into a locked drawer, from whence they emerge the next morning as soon as the mail is distributed.

One of his associates wonders how he can think of so many different ways of doing things; another wonders how he keeps track of so many different matters that are right at his finger tips; another wonders why he seems to have so little to do when he knows so much is being done. Ask the sales manager himself, and he smiles and says, "It's my quiet hour—that's all; it gives me time to think."

GASOLENE PUMP AS EXAMPLE OF PROFITABLE CONVENIENCE

"We grow so accustomed to the shortcomings of our ways of doing business that we are blind to them, I suppose." remarked a dealer who had stolen a two weeks' vacation in the midst of the busy season and spent it partly in the woods and partly in the large cities, where he had a good chance to observe the methods of other concerns in the same line. "My customers have always driven straight into the garage for gasolene; my pump was away at the back, and as far as I was concerned the arrangement was satisfactory enough. But when I began driving my car around another large ci where for once I was the customer I n ticed that I appreciated the saving of eve minute in getting supplies. A street tai that was situated at the curb made a h with me, as it apparently did with mai others.

"When I got back home I wrote for catalog. The salesman followed and got n order for the tank without argument. has been in operation for three weeks ai my gasolene sales have tripled. I am d ing business with people who apparent never even looked at my garage before, ai I am confident of a still further increas as people get accustomed to the conve ience of my service."

An idea picked up here and there ai adopted can often be turned into a b money-maker. Keep your eyes and yo ears open. What you don't see you m read about. But unless you adopt the id and make it yours it will not do you ai good.

EVEN THE VOICE AT THE 'PHONE MAY INDUCE ORDEI

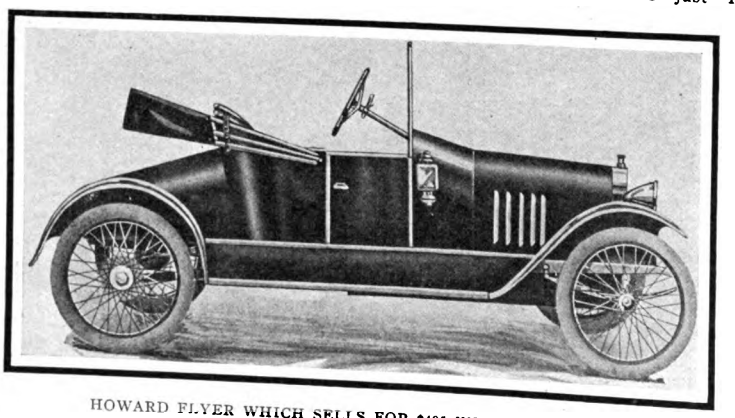
An accessory dealer who sells a comple line of motorists' supplies found that h telephone business increased material with a change of operators. Acting on t advice of a business friend whose couns he valued highly, an intelligent, bright g with a pleasing voice was engaged at $15 week—just seven more than he had be paying. The girl was informed that s was the point of contact between telepho customers and the house and was just much in the sales department as anyboc Catalogs and booklets were given her read and prices and other details explain to her thoroughly, with the result that aft two or three months she could reply to t average inquiry instantly. Besides savi much of the time of other employes, s has more than earned the difference in s ary by business booked over the 'phone.

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HERE'S THE HOWARD FLYER; SELLS FOR $495, EQUIPPED

First of Batch of 5,000 Has Four-Cylinder Unit Power Plant and Two-Speed Gearset—Roadster Body on Standard Tread.

Adding one more to the very short list of manufacturers who have essayed the production of a car to sell for less than $500, the Howard, or rather the Flyer, as it is styled by its makers, the Thomas Howarod Co., of 319 Atlantic avenue, Brooklyn, N. Y., at length has reached the stage where it is practically ready for the market. Brief advance specifications of the car were published in Motor World under date of August 28th, when announcement of the plans of the Howard company to produce it in a Detroit factory was made; the tentative selling price, which had been set at $450, has been raised to $495, though the specifications remain practically the same.



HOWARD FLYER WHICH SELLS FOR $495 WITH EQUIPMENT

In exterior appearance, the Flyer suggests no other car in any particular detail, as may be judged by the accompanying illustration, and a studious attempt has been made to eliminate anything that might be judged outre, to use an expressive French word. The car is small, it is true, but that it is in no sense a cyclecar, or what has generally come to be termed a cyclecar, is revealed by the fact that its tread is standard and that its transmission elements include such evidences of real automobile construction as a two-speed selectively controlled gearset and shaft drive terminating in a substantial differential contained in the rear axle housing.

Furthermore, the car has a full-sized roadster body deeply upholstered and equipped with all the little appointments that help to make the driver and his "right hand" man—or woman—happy. Which is to say, it has a top and a one-piece built-in windshield that can't rattle, and liberal storage space for the stowing of tools and things that are not tools. The whole after deck, in fact, is a great, commodious storage space, the gasolene tank, which holds some 10 gallons of fuel, being located under the seat.

Right hand man—or woman, as the case may be—is used advisedly, for, in conformity to popular demand, the steering column has been placed at the left side. It follows, quite as a matter of course, that the control levers have been placed in the center of the footboard so as to leave both doors free and unencumbered. One of the levers is for the gearset, no need to explain, and the other operates the emergency brakes, which are mounted on rear wheel drums; the wheels, by the way, have wire spokes and measure 28 inches in diameter; they are shod with three-inch tires and the distance between the axles is just 100 inches. Of the two pedals, one controls the clutch, a three-inch face, 11-inch cone that is contained within the flywheel and is quite hidden owing to the fact that it is within the housing that holds the gearset and is bolted to the engine, and the other operates the service brake, which is a band contracting on a nine-inch drum on the transmission shaft.

Under the hood, which has been carefully blended into the lines of the deep skutttle so as not to offend the susceptibilities of the esthetic, there is a four-cylinder four-cycle unit power plant with cylinders measuring 2¾ inches in bore by 4½ inches in stroke. Further delving into the intricacies of engineering data brings to light that the crankcase is of the barrel type; the crankshaft has three substantial bearings; the oiling system operates on the vacuum principle; cooling water is circulated through the jackets and the radiator by means of a substantial pump; ignition is effected by high-tension magneto; and that a 12-inch ball-bearing-mounted fan induces a draft through the radiator.

By way of ironing out the irregularities in the highways, reliance is placed primarily upon semi-elliptic front springs and full-elliptic rear springs, though there is no reason to doubt that the deep upholstery also does its part in protecting the spinal columns of those who ride in the car. Above the springs there is a pressed steel standard channel frame with a horn front and four substantial cross members to discourage weaving; the frame is 30 inches wide.

Equipment includes, as well as the top and the windshield, two acetylene head lamps fed by a generator, two oil side lamps and an oil tail lamp. It is planned to produce 5,000 cars in the first series.

Care Needed in Adjusting Wheel Bearings.

In adjusting any form of cup and cone ball bearing, especially those that are used in wheels, for instance, there is grave danger that too much pressure may be put upon the balls and that the life of the bearing will be shortened in consequence. It should be remembered that bearings that are tight when the weight of the car is off them, will be still tighter when they carry their load. A safe proceeding is to tighten the bearing until all "shake" or looseness is eliminated, yet the wheel is free to spin easily several revolutions under not too violent persuasion. It is a mistake to adjust bearings too loosely just as it is a mistake to adjust them too tightly.

Simple Cure for Windshield Rattles.

One way to cure the rattles that sometimes are caused by the loosening of windshield glasses in their binding is to calk the cracks with brown paper mashed to a pulp with water. After the calking has dried, it should be varnished, and the job generally can be relied upon to last almost indefinitely. The varnish will make the joint weather-proof.

Sediment That Stops Circulation.

Water circulation occasionally is interfered with by foreign matter collecting in hose connections from the bottom of the radiator to the pump; the pocket in the line formed by the hose offers an opportunity for deposits, and if there is any indication of trouble in this direction the bottom hose connection should promptly undergo a cleaning.

Simple Rule for Tire Inflation.

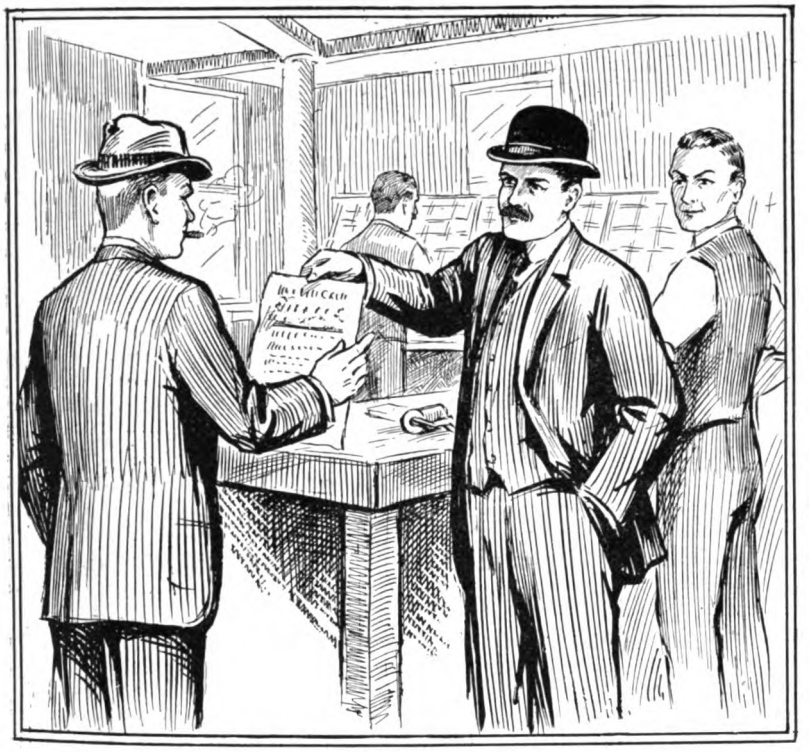
In case of doubt as to the proper pressure for tires, a safe rule is said to be to multiply the diameter of the front tires by 17 or 18 and the rear tires by 20, the resulting figures being the proper pressures. For instance, if the car has 3½-inch tires, 3½ x 18 gives 63 pounds for the front tires and 3½ x 20 gives 70 pounds for the rear tires.

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SOMETHING WORSE THAN TRADE'S WORST LAPSI

Not Meeting Promptly Visitor to Salesroom Surpassed in Enormity b Running Away After He Enters—Reilly and Sales Manager Inspect Company's Initial Attempt at Dealers' Uplift

"Have you got a proof of the first page of the Dealers' Bulletin?" asked the Sales Manager, who, with Reilly in tow, had passed from the factory proper into the little corner of the top floor which housed the diminutive print shop where much of the company's circularizing literature was printed.



THE SALES MANAGER, HANDLING IT GINGERLY, PASSED IT ON TO REILLY

"I'll get you one," replied the foreman, as he reached for the ink roller, ran it over one corner of a form, carefully spread a sheet of paper and proceeded to thump a vigorous and methodical tune with his block and mallet.

Inspecting Company's First "Shot."

The foreman handed the proof to the Sales Manager, who, handling it as gingerly as had the printer, passed it on to Reilly; Reilly reached for it and, of course, managed to stick his thumb in the wet ink, thereby transferring to that digit about 16 ems of the company's initial installment of its dealers' uplift campaign. When Reilly looked at his decorated thumb he saw backwards a part of an admonition to the dealers to take every advantage of the opportunity which lies in meeting with promptness and courtesy the visitor to the salesroom.

"Good!" commented Reilly, "Fine!" as he read the message in its neat and attractive typographical form, showing the dealer how by a mere lapse in the conduct of his business he might have been putting crepe on the door at which opportunity had intended to ring the bell.

"Good stuff!" he exclaimed, as he handed the proof back to the Sales Manager and attempted to wipe his thumb on the edge of an imposing stone. "How long are you going to hammer on that theme? How long do you think it will take for it to sink in and do some good. How many numbers is it going to run through?"

"That's hard to tell. Half a dozen times, anyway, probably," replied the Sales Manager.

"It's a good scheme, as I see it."

"I want to thank you for giving us th idea last week."

"Aw, forget it! I'm so full of ideas I unhealthy," expostulated the dealer, as moved with the Sales Manager over where the "devil" was trying to feed a lit job press so the "boss" wouldn't say t work looked as if the "kid" had fed it wi his feet. He was so busy he couldn't wh tle.

Hitching Codicil on the Sales Idea.

When the lad seemed embarrassed at h ing made an exhibit and miscued twice succession, the two visitors left for t many-stepped trip downstairs.

"You might hitch a kind of codicil or that idea along toward the finish," su gested Reilly.

"What do you mean? Codicil?"

"Just a sort of supplementary idea, extreme or something-worse kind of su ject——"

"Well, what is it?" demanded the Sa Manager. "Last week you said there was anything worse."

"I've reconsidered the matter and ha decided that there is something worse," joined the dealer. "This fault or lapse dealers which you are trying to corre where it exists, is that of not meeting sal room visitors as soon as they come into t salesroom and letting them roam arou unattended and feel embarrassed. Isn't i

"Yes."

Something Worse than Something Bad

"Well, what is worse, in my estimati is not the failing to meet a man but the ru ning away from him when he comes in t door."

"Who ever heard of such tactics those?" challenged the Sales Manager.

"I did—and you're going to. Of cour it isn't so prevalent as the other piece mismanagement, but where it does oc it is infinitely many times worse. I kn your first thought is that it is so nc sensical that its occurrence is practica impossible, but wait until I have explair what I mean. When the thing is inve gated in all its phases you will discover

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believe, that the habit exists even if it doesn't appear so glaring as it sounds."

"For instance."

"Well, here's one instance—and one of the most pointed I can bring to mind. When I was on a tour last summer down through the southern part of the State I put the car up one night at a garage near the little hotel in Benford. The next morning I went over to get the car and walked into the office where the proprietor was sitting at a desk. I could see him through the window of the office door, but before I got the door open he had gotten up and was on his way out. I was going to say something to him, but he gave me a look over his shoulder and kept right on going. He never even spoke to me."

"What did you do?"

Found Mechanic to Get Out His Car.

"What could I do? I went out on the garage floor and found a man who got my car out for me and I started on my way. I suppose I transacted what business I had just as well with the floor man as I could have with the proprietor; I don't even remember what I wanted to see him about. In fact, about the only thing I remember is that I didn't see him. But I'll take that back ; I did see him—and that's all."

"Maybe he was busy," suggested the Sales Manager.

"Busy!" exclaimed Reilly. "Maybe he was, but couldn't he have stopped long enough to have told me he was busy? It wouldn't have taken him ten seconds to have told me he was busy and had to leave at once and have called someone to take care of me, but he apparently never thought of such a thing. His idea of the way to handle the situation was to walk out on me and leave me to find someone to give me what I wanted. This garageman is also an automobile dealer and, take it from me, he'd work a long time before he sold a car to me after an affront like that!"

"Doesn't handle our line, does he?"

Insulting Conduct in Store and Office.

"No," replied Reilly; "if he had I would have told him what I thought of him, exercising my buttinsky license. It happens in almost any business, Jim, even if you may be inclined to doubt it. Some people may be so accustomed to it that they never notice it, while with others it makes a deep and rankling impression. Did you ever enter an office, have a man look at you from his desk and then go on working as if he had never seen you, or did you ever go into a store to buy something—generally a small store where the proprietor acts as one of the clerks—and have the man start to walk away just as you went in? Maybe he started toward the back of the building to answer a telephone or stack up a stock of goods that had been thrown down for some other customer, but anyway, he walks away from you just at the moment you naturally expect he would walk toward you."

"I can recollect a few such instances, now that you put it that way."

"And they're darned insulting, too, Jim. There is no excuse for it, and so far as I can guess it for myself it is nothing but a queer streak in the businessman's make-up and a streak that ought to be rubbed out. They seem utterly unable to appreciate the fact that the public is their market and that best results are to be obtained only by a diligent cultivating of this field of profits."

"But do you think, Reilly, that this is so much the fault of employers as of employes?" asked the Sales Manager, as they ended a long and leisurely trip down through the several floors of the factory and into the Sales Manager's office.

Often More the Fault of the Employe.

"You're right on that point, I believe, Jim; you'll find many more employes that way than you will employers, and it is a thing for the dealer in cars or accessories to watch out for. Once he finds that an employe is either indolent, inattentive or so impressed with his superiority to the public that he likes to make the customer await the salesman's convenience, it is time to get a new salesman. Rather, he should get 'a' salesman, for the other one isn't a salesman; he's as bad as a smallpox sign on the door, so far as the continued interest of trade is concerned.

"Salesmen of this type, when they see a man come in, will deliberately look at him, letting the customer know his entry has been noticed, and then will proceed to busy themselves with some little thing before attending to the customer. I can't imagine many things which are of so much importance that they warrant a salesman in neglecting to go toward instead of away from a customer."

"He might be busy," suggested the Sales Manager again.

Value of a Moment of Attention.

"That's true," agreed Reilly. "He might be, but even then there is always a way out. If, when the customer comes in the salesroom door, the telephone rings the salesman could at least pleasantly excuse himself and request the customer to wait half a minute until he answered the call and the majority of customers would be glad to do it and never realize that they were being made to wait. You can do a great many things, Jim, but what counts is the way you do them. A little attention of that sort is like an investment in patent medicines; it is infinitesimal compared with the dividends. It——"

"H-e-l-l-o-o! Reilly! I haven't seen you in a long time. Where have you been keeping yourself?"

Reilly grasped the hand which was thrust forward by a big man who had opened the office door, although Reilly looked several seconds before he recognized its owner. Dirty and grimy he was, to be sure, and his overalls and jumper were not exactly in harmony with office furnishings—but it was the Old Man himself.

U. S. Motor's Landlord Seeks its Rent.

The Columbus Circle Realty Co., which owns or has the leasing of the premises at 3-7 West 61st street, formerly occupied by the United States Motor Co., insists that someone should pay the rent for the first three months of the present year. It appealed this week to Judge Hough in the United States District Court for the Southern District of New York, where the big corporation was put through its receivership, asking that the receivers or the Maxwell Motor Co., as assignee of the purchaser of the assets, pay this rent. Judge Hough held that the receivers were liable for 11 days' rent, and that he had no jurisdiction to compel the Maxwell company to settle if it were the legal debtor for the balance.

Beaver State Motor Locates in Oregon.

The Beaver State Motor Co., of which P. A. Combs is president, has secured a factory site in Gresham, a little town 12 miles east of Portland, Ore., Portland capital having been invested in the enterprise. It was originally the intention of the Beaver State company to locate in Milwaukee, Wis., where it was organized, but differences arose which caused it to go west.

Van Blerck Secures Site in Monroe.

The Van Blerck Motor Co., which manufactures automobile and marine engines in Detroit, has secured a site in Monroe, Mich., on which a one-story brick factory, 177 x 600 feet, immediately will be erected. When it is completed, the Van Blerck company will remove from Detroit.

Wants its Pay for a Sidewalk Pump.

Claiming that no payment ever was made on a sidewalk pump which it installed for the Federation Supply Co., of Utica, N. Y., the Wayne Oil Tank & Pump Co., of Fort Wayne, Ind., this week filed suit in the Supreme Court for New York county; it demands $260.

The Woods Motor Vehicle Co., of Chicago, has established a branch in Peoria, Ill. It will be in charge of W. E. Johnston.

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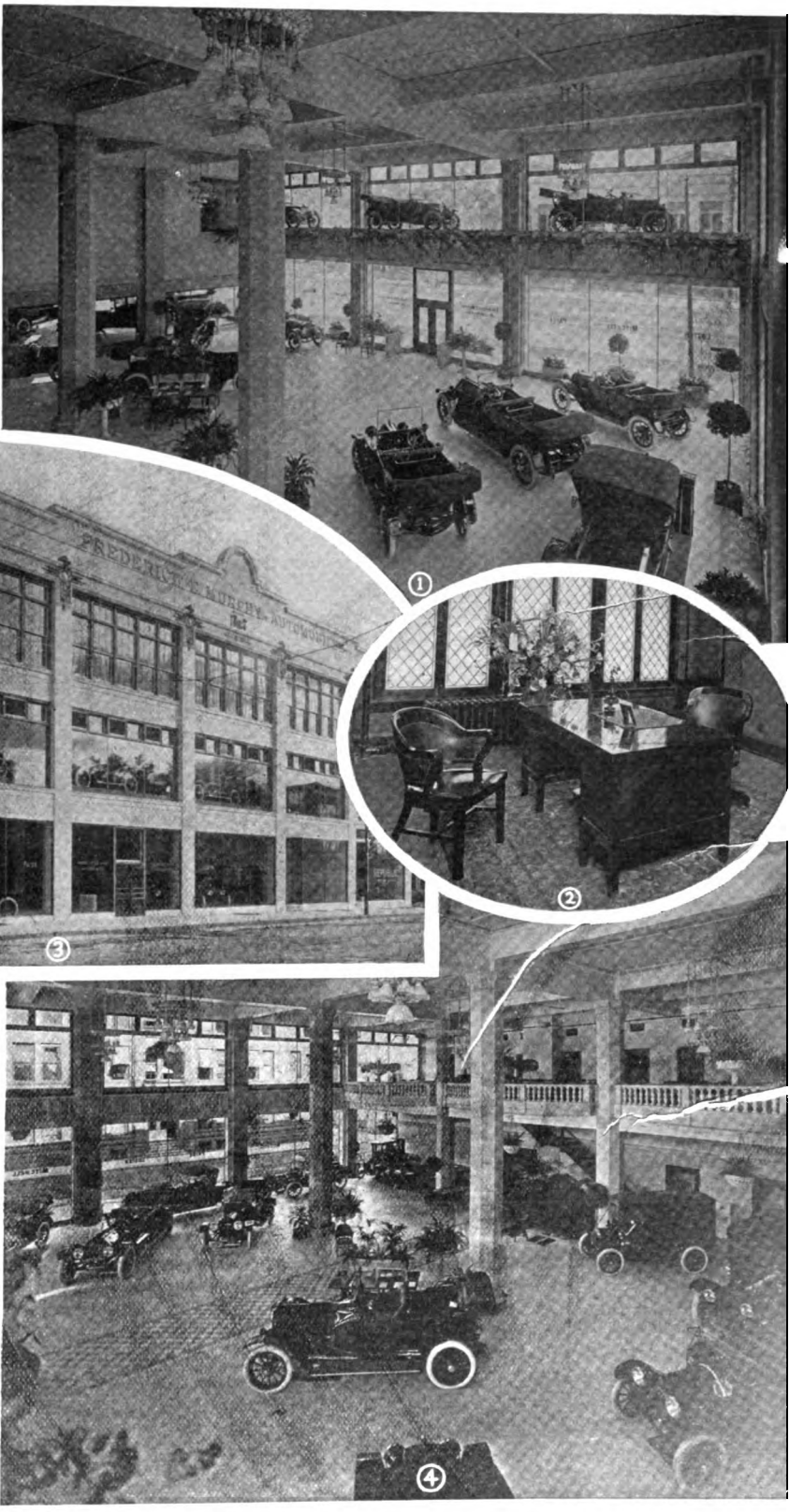
NORTHWESTERN DEALER'S ESTABLISHMENT THAT RANKS AS PALATIAL MODEL OF ITS KIN

Spacious Salesroom, 32 Feet High, a Third-Birthday Present to Minneapolis Company — Attractive and Possesses Up-to-Date Equipment.

What is said to be one of the most palatial and best equipped dealer's establishments in the Northwest was opened two weeks ago by the Frederick E. Murphy Automobile Co., of Minneapolis, at 13th street and Hennepin avenue, a location in the heart of Automobile Row. It has a frontage of 137 feet, is 144 feet deep and is of three stories, with a front of cream-white glazed brick and terra cotta.

The showroom is one of the features of the structure; it is 32 feet high, 81 x 76 feet in floor space, is finished in cream and buff and the white-tiled floor is outlined in a delicate blue. Spacious plate glass windows on two sides from floor to ceiling afford ample light during the day and at night illumination is effected by six shower chandeliers, of 17 lamps each, and numerous other smaller lights throughout the room. A mezzanine floor on the street side, where cars are displayed, has lin-o-lights.

Accessory and stock departments are at the rear, as is the repair-shop, 54 x 144 feet. The remainder of the building includes offices, elevators, a 10,000-pound electric elevator for cars, with a speed of 120 feet a minute, shower baths for the employes and women's rest room. The building cost $165,000 and was taken possession of on the third anniversary of the company in the business. The concern handles Lozier, Mitchell and Paige cars and Commerce trucks. There are 88,000 feet of floor space.



1 AND 4—TWO VIEWS SHOWING SALESROOM INTERIOR AND DISPLAY OF CARS
2—DEALER MURPHY'S PRIVATE OFFICE. 3—EXTERIOR OF BUILDING.

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"My Best Sale and Why I Regard It as My Best"

Keeping Car Sold After Dilatory Actions, Due to Special Order, Had Helped "Unsell" Car—Offsetting Two Weeks' Promise That Developed Into Six Weeks' Fulfilment—Fair Treatment as to Deposit and How it Helped.

By W. R. ALEXANDER, Indianapolis, Indiana.

SALESMAN WHO WON OUT WHILE HIS CO-WORKERS DODGED MAN WITH LEGITIMATE COMPLAINT

One of the other boys had sold him—we had his order and a $250 deposit. I suppose you wonder how I figure I had any just cause to be proud of the sale. So far, I didn't.

It was a special order all the way through—special whipcord upholstery, special painting, including trim sticks and instrument board. The special features went down to fine points like binding on the cushions. Believe me when I say the company didn't thank the salesman for that order, for it came in the middle of the busy season. However, the order was accepted and started through. Delivery had been promised in two weeks.

Promise Dragged to Triple the Time.

You all know how a fellow just drops in to see "how his car is coming along." Well, we began to see more of our new customer in about ten days. We assured him it would be along shortly. Two weeks went by—three—four—five—six, and ten times as many promises to the buyer. Say! we used to leave the office by the back door and go down side streets to avoid meeting him. As time wore on, he wouldn't have anything to do with the young man who had taken his order, and then he "wished himself on me." I had no arguments in my favor. I could only admit he had a "kick coming" and agree with him in everything he said, as I have found that is sometimes the best "first aid to the injured" and then await developments.

He had figured on a tour in his new car—some 1,500 miles. It would have been the sixth week after he placed his order, and as the special parts were beginning to arrive then he put the trip off for a week. He was going to start Saturday, but it being a special car, some things weren't right. More delay! You can imagine the buyer's disappointment and disgust by the first of the following week.

I didn't see him for a couple of days; I knew something was happening, but I couldn't get a line on him. The car was finished—final tested and ready to deliver—but no man.

The next morning he was down bright and early. I was able to meet him with the first "real" smile I had ever given him, for I knew this was the end—the car was ready. He didn't return my smile, but I had gotten used to that several weeks before, so didn't think anything especially wrong; but when he said he had bought another car and was leaving that afternoon I knew it was time to get busy.

Effort Required to Keep Car Sold.

I have sold lots of cars—easy sales and hard ones; but here was a new situation—to keep a car sold. It was a special car on our hands; I simply had to move it; that was all there was to it. Of course, we had a small deposit, but it was not our policy to hold it in a case like this. I had to sell him all over again, and, believe me, he was far from a good prospect—and with a brand new car.

He said he wouldn't take but a minute of my time; he only wanted to know what we intended to do with his deposit; he expected to forfeit it. I had had a good many weeks to size up this man, and now I was going to see if I was a good judge of character, although a good deal was at stake. There was only one way to do it, and that was to get on his side of the fence with him. I assured him we realized his disappointment caused by the delay—his embarrassment in having to postpone his trip, and that while we were sorry to lose him as a H—— owner, we valued his good wishes toward us above everything else and would gladly return his deposit in full. It was the unexpected for him, and I could see it had gone home when he said he would like to see the car if it was finished.

Resale Costs Prospect $100 Deposit.

The car was a beauty; there was no question about that, but I didn't comment on it, as I knew he could appreciate it and I felt that this was one time when it was best not to talk. He didn't say a word, but walked all around it and finally got in it. I was selling him by letting him sell himself. When he put his hands up on the wheel and exclaimed "She's a bird!" I knew it was all over.

We ran the car out that afternoon and, as he was smiling and telling me goodby on the start of his trip he told me he really hadn't bought the other car but did have a $100 deposit on it, which he was willing to lose.

I claim that was my sale—my best one.

"Check Casher" Working in Chicago.

Money is said to be free in the West, and it evidently is upon this basis that a young man of uncertain name and residence has been seeking a workless livelihood along Chicago's "Automobile Row." He has not thus far cashed in very heavily, but has a good and plausible scheme. He has made several attempts, the last of which was at the salesrooms of dealers Rowe, Young & Cooley.

He played the part of a prospect to perfection, and after the proper amount of talk on the part of a salesman, decided that the Westcott was the car for him. He offered his check in payment and said he would call later for the car; this was perfectly satisfactory, as it would permit an examination of the paper. But—he also asked that the company cash an additional check of $25, as he needed the money the same afternoon and did not wish to go to the bank after it. That part of his scheme failed to work, for which the dealers were very glad when they later learned that his check for the car was worthless.

Chicago to Have "Cowcatchers" on Trucks.

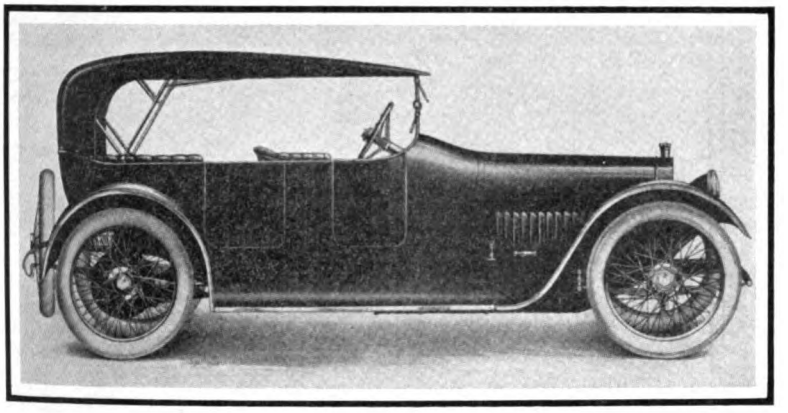
Following the lead of Detroit, Chicago has passed an ordinance which seeks to compel all commercial vehicles to be fitted with fenders "as in the case of street cars," such fenders to be approved by the inspectors of public vehicles. Truck owners are given 90 days to equip their machines with cowcatchers, but no information is given as to the kind of device that will be approved. The issuance of a similar order in Detroit brought to light several devices for such use.

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STRIKING BODY OUTLINES IN PULLMAN "LIGHT SIX"

Special Top and Windshield Harmonize with Long, Straight Lines—Vulcan Electric Gear Shifter One of its Big Features.

In the general description of the latest series of cars manufactured by the Pullman Motor Car Co., of York, Pa., published in the August 28 issue of Motor World, the leading features of the light "six," model 6-46, which is the most recent addition to the Pullman family, were brought out and sufficient data given to convey a good idea of the quality and characteristics of the machine, in which modern ideas are incorporated to an extent that is indicatetd by the fact that control of the gearset is effected through the medium of a Vulcan electrtic gearshifter, a set of buttons on the steering wheel being substituted for the usual lever, and starting and lighting are performed by a Westinghouse dual unit system. That the appearance of the car in no wise lags behind the mechanical design is plain from the accompanying illustration.



PULLMAN "LIGHT SIX" MODEL SHOWING STREAMLINE BODY

The flush surface and stream-line effects are carried out in a body that is decidedly distinctive in appearance; the long, tapering hood merges almost imperceptibly into the forward part of the sides and the deep cowl under which is carried the gasolene tank. There is an absence of side lamps or other projections to break the clean sweep of the surface and the straight top line is interrupted only slightly in its run from the radiator to the rear seat-back; the close-fitting crowned mud-guards and last, but not least, the wire wheels, help to produce an ensemble effect that attracts instant attention. Even the top is specially designed to harmonize with the machine, having a rounded rear end and being supported only at the rear end and at the windshield. Complete enclosure is effected by means of Collins curtains. The wheelbase of 130 inches lends itself well to the production of the appearance desired by the designers.

The long-stroke motor—4¾ x 5½ inches—is lubricated by a combination of pressure and splash systems, with sight feed on the dashboard, and the charges are fired by a Bosch dual ignition system. The heated water from the cylinder jackets is pumped through and cooled by a cellular radiator constructed of German silver. Drive is through a four-speed gearset, controlled electrically, as already stated, and mounted on imported annular ball bearings. Direct drive is on the third point.

Both front and rear axles are Timkens; the rear hubs of the wheels carry the brake drums, the brakes being internal expanding and external contracting. In front the springs are long, flat, semi-elliptics, with thin, sensitive ends, while the rear springs are three-quarter elliptics, scrolled. The rear springs are extraordinarily long, being no less than five feet from eye to eye; the front springs are 40 inches long. A rather unusual arrangement consists in underslinging the front springs, while the rear springs are mounted above the rear axle. Left-hand drive is one of the up-to-date features of the machine; the steering gear is of the adjustable worm and sector mechanism, semi-irreversible, with ball thrust, and the hand wheel is 19 inches in diameter and is covered with rubber.

On the wire wheels the tires are 36 x 4, with quick-detachable rims. The equipment includes a power-operated tire pump, the regular and customary set of tools carried in a tool box under the front seat, silk mohair top with Collins curtains, a clear- and rain-vision windshield of special design, a motor-driven electric horn, speedometer, electric starting and lighting system of the Westinghouse make, with the usual electrical instruments, dash and trouble lamps.

EMPHASIZES NECESSITY FOR ACCURACY IN BALL BEARINGS

German Pioneer Maker Lets in Light on Several Subjects in Lecture to S. A. E. Metropolitan Section —His Views on Fitting.

That the little growl that sometimes emanates from ball bearings—that metallic chuckle of metal running over metal—is very nearly proof positive of improper fitting, was one of the points that the members of the Metropolitan Section of the Society of Automobile Engineers had drilled into them very thoroughly on Thursday night last, 25th ult, at the first of the regular monthly meetings, after the summer recess, that was held in the society headquarters in New York. This point, however, was only one of many, equally as interesting and equally as interestingly set forth, that were contained in a paper entitled "A Review of the Inception of the Ball and Roller Bearing and Their Application to the Automobile Industry," that was read before the section by Prof. A. Riebe, of Berlin, Germany, who is paying a visit to America.

Prof. Riebe himself, who is a truly massive Teutonic gentleman with the flowing beard of his countrymen, is generally credited with being one of the pioneers in ball and roller bearing science, having collaborated with Prof. Striebeck in the design and production of the first D. W. F. unit ball bearing. Prior to the appearance of this bearing, when the cup and cone type such as long was used in bicycles and sewing machines was the only one known, Prof. Riebe conceived the idea of the unit bearing and at the instigation of the D. W. F. company consulted Prof. Striebeck, then a professor in a polytechnic university in Germany. The upshot was that shortly afterward the unit D. W. F. bearing became a reality. Subsequently, Prof. Striebeck and Prof. Riebe separatetd, the latter to head a company of his own, styled Reibe Kugellager and Werkzeug Fabric, which produces bearings designed by Prof. Reibe, whose visit to this country is to attempt their introduction.

Although a considerable portion of Prof. Reibe's address was of a highly technical nature, a part of it was of such a character as to be not only interesting and instructive but entertaining as well to those who have no pretensions to a knowledge of the elucidation of the fourth dimension. At times Prof. Riebe struggled in a truly heroic manner with the intricacies of the English language, though he always managed to make himself understood in the end.

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The burden of the address was, practically, the necessity for absolute accuracy in the manufacture of ball and roller bearings, first; and second, the necessity for proper fitting by those who use such devices. Accuracy, he said, cannot rightly be considered to have been obtained unless absolute interchangeability of bearings is possible. In the construction of bearings, he urged that as shafts invariably are slightly oversize and seldom, if ever, are under size, it constitutes good practice to employ balls that are slightly under size in order to allow for the possibility of the expansion of the inner race due to too tight jamming at the hands of not too scrupulous, or not too learned, shop foremen.

That in some bearings it is possible to so expand the inner race as to make the bearing bind. Prof. Riebe demonstrated by forcing a bearing onto a shaft and thereby effectually eliminating no little side play that normally existed in the bearing. By driving the bearing still further onto the shaft, he demonstratetd that it is possible slightly to distort the outer race and in this way to throw strains on the bearing which it cannot logically be expected to withstand without showing signs of excessive wear.

The result of such fitting becomes apparent in a certain amount of noise—a sort of singing metallic chuckle—that is readily distinguishable and that should be recognizable, he pointed out, as an indication of improper fitting. "Noisy bearings," he summed it up, "are jammed bearings; and jammed bearings wear quickly."

No less care is necessary, he pointed out, in the proper fitting of the outer race, too, and it is here that a great many errors are made because of the general misconception of the definition of the term "piston fit." Trouble is not likely to ensue, he continued, provided a true piston fit is given the outer race in its housing, but, he added, and raised a hearty laugh, "A workman is likely to say, 'Well, if they want a piston fit, let us give them a good piston fit,' and the result is that the fit keeps getting 'better and better' until it no longer can be called a piston fit." It is then, he further pointed out, that the trouble follows—that the bearings virtually grind themselves to pieces for want of the necessary room in which to work propertly.

With regard to dust and dirt in bearings, Prof. Reibe threw a new light on the subject by stating that it is not so much the abrasive action of such material that plays hob with the bearings as it is the room it occupies. Such dust and dirt, he urged, soon was ground so fine that its abrasive action was practically nil, though the fact still remained that the balls, in rolling around their races, were compelled to roll over the finely pulverized dust with the result that their diameter was, in effect, increased, with the net result that the bearing tended to bind.

The best material for ball bearings, he said, at first was considered to be the best grades of crucible tool steel, though later experience tended to prove that chrome steel answered the purpose still better. An analysis of a good steel suitable for ball bearings, he said, probably would show constituents in the following proportion: 1.5 chromium, 0.8 carbon, 0.00002 sulphur, and 0.00002 phosphorus.

Klaxon Revives its Hand-Operated Horn.

Progress sometimes is made in circles, in a way of speaking; that is to say, history repeats itself and things come back to the place where they started. The truth of this is borne out by the fact that the Lovell-McConnell Mfg. Co., of Newark, N. J.,



HAND-OPERATED KLAXON

manufacturer of the Klaxon electric motor horn, has reached back a few years, taken up the original hand-operated Klaxon horn, first produced in 1909, the manufacture of which was discontinued owing to the popularity of the motor-driven signal, and redesigned and improved it and placed it on the market in response to the demand for a hand-operated horn with the real Klaxon tone.

The Klaxon principle of a toothed wheel rotating against a diaphragm is embodied in the new edition of the hand Klaxon; the diaphragm is of vanadium steel and the wheel is operated, through a train of free-running gears, by a push-rod which responds to a very light touch. The wheel turns at high speed and the note given out is the true Klaxon note; the harder the pressure, the faster the speed and the louder the sound. Deliveries will begin November 1 and the price will be $10.

Interesting Survey in Coffin's "Analysis."

The fact that Howard E. Coffin's "Critical Analysis of Motor Cars of 1914," issued this week by the Hudson Motor Car Co., of Detroit, is avowedly written for the purpose of promoting interest in the Hudson six-cylinder automobiles, for which Coffin is responsible, is not by any means a reason for thinking that the little book is uninteresting, or is of value merely as a means of lauding the cars in question. On the contrary, the Hudson cars are hardly mentioned. The idea, which has been carried out in a most interesting manner, is to take up the broader principles and the more general aspects of motor car design and construction, with particular reference to the advantages embodied in the "six." The amount of real information contained in the 55 well written pages is quite sufficient to entitle the book to a place within easy reach of those who are often in need of data on the subjects covered.

Direct Drive Pump for Lent Apparatus.

The Lent Motor Fire Engine Corporation, which was incorporated last week with $250,000 authorized capital, proposes to build an unusual type of self-propelled fire engine in which a new type of centrifugal pump is carried in the waist of the chassis between the engine and the gearset. Contrary to the usual practice, the "wheels" or "runners" of the pump are connected directly to the propeller shaft, with which they rotate. When water is not passing through the pump, they absorb no power, of course, and act merely as a sort of supplementary flywheel. Disconnection of the gearset by means of an ordinary clutch leaves the pump ready for immediate action. The officers of the corporation, which has offices at 2 Rector street, New York, are Leon B. Lent, M. E., president; Francis F. Hine, vice-president; W. R. Fuller, secretary and treasurer. These men, together with Chas. M. Wales, Fred H. Colvin and Fred R. Low, constitute the board of directors of the new company.

Home-Made Lubricant for Ball Bearings.

A good lubricant for ball or roller bearings can be made cheaply and easily by mixing good quality vaseline with light cylinder oil of good quality, the two combining to make a sort of a "slush." To permit the thickened mass to reach all parts of the bearing, it should be heated to reduce its viscosity temporarily. Bearings should then be dipped into it and allowed to remain submerged until the grease has had time to reach all parts, when they can be removed and permitted to cool. If the excess lubricant is wiped off the outside enough will remain in the races to ensure adequate lubrication for a long time. Such a mixture will stay in place and will not run out like lighter oils; at the same time, its viscosity is not sufficient appreciably to increase friction.

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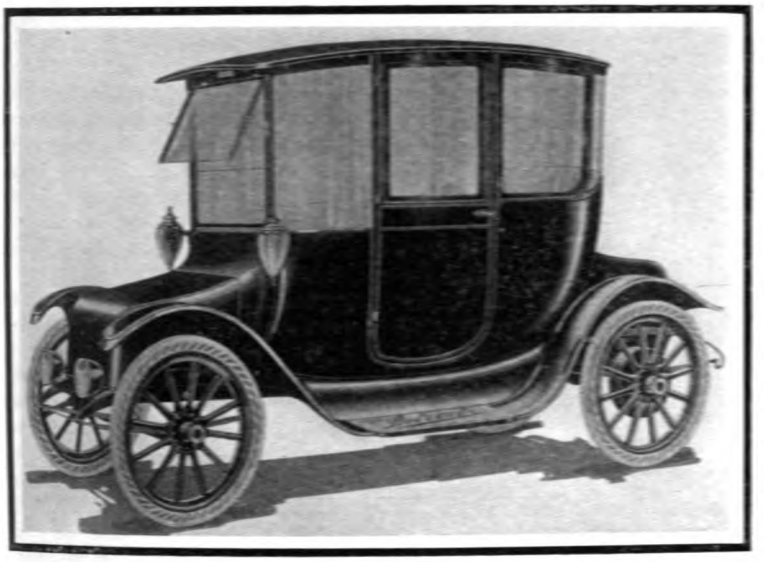
DUPLEX CONTROL SYSTEM IN WORM DRIVEN DETROIT

Five-Passenger Brougham Operated from Front or Rear Seat—Worm or Bevel Gear Drive Optional in Three Models.

The electric motor is about as quiet a unit as human ingenuity is likely to devise and when it is combined with a worm drive and nothing else in the way of driving gear inside of the rear axle, as is the case with the Detroit electric built by the Anderson Electric Car Co. of Detroit, Mich., there is so little excuse for noise that the reason why the Detroit is a smooth-running machine becomes evident. Still if it were not for the fine work that is involved in the fitting and assembling of the parts and the ingenuity and reliability of the control mechanism, there might easily be rattling and squeaking in the various joints and trouble with the means for controlling the current, steering the car and operating the brakes.

The executives of the Anderson company that worm drive is the right drive is the result of three years' use of the system in some of the Detroit models, while other models have been fitted with bevels. The worm and gear are imported, being of the Daimler-Manchester make, and run constantly in a bath of oil, as the worm is underhung, it is constantly submerged in oil, so that the lubrication is perfect.

Though the worm drive is not a new thing in the Detroit electric, there are features that are incorporated in the latest series that have not been previously employed, and chief among them is the duplex drive system which is found in the five-passenger brougham shown in the accompanying illustration. There are two complete sets of controls, one placed for handling from the Pullman type chair at the front of the car, on the left side, and the other set convenient for operation from the rear seat, which incidentally is 51 inches wide and accommodates three passengers. The pedals for the rear control are so placed that when the front seat is swiveled to face forward it covers the pedals; the levers of the manual control drop flat against the side of the car and are quite out of the way.



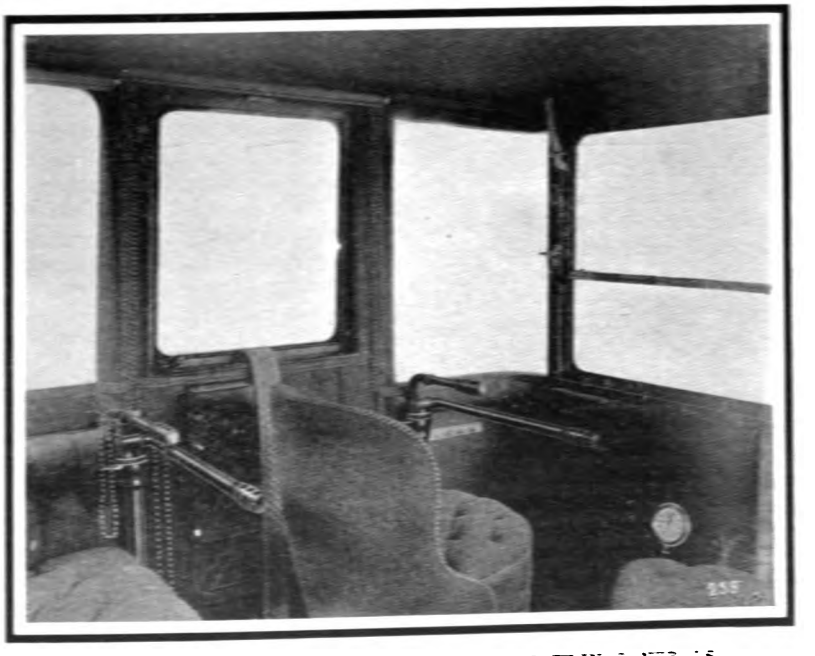
DETROIT FIVE-PASSENGER DUPLEX DRIVE BROUGHAM

Another Detroit feature is the Haskin rain-vision windshield which is standard equipment of the enclosed models. In this device the upper section of the windshield, which in its entirety fills the whole front of the car, is formed of two parallel sheets of glass with an air-space between them. The two glass sheets are separately adjustable as to angle, and one may be raised and the other lowered, or both raised or lowered at once. In very cold weather with both lowered the utmost protection is afforded from the wind, the dead air space acting as an effective heat insulator. Batteries, which are of a type in which washing out is not required, are easily reached by lifting hoods at front and rear.

The five-passenger brougham is only one of a number of models produced by the Anderson people, though it is a representative one and includes about as much luxury as it seems possible to get into the compass of a motor car. Upon a similar chassis is mounted a four-passenger brougham body with single control only, the driver occupying the rear seat. A type known as the "gentleman's roadster," also fitted with worm-driven rear axle, is an open car with long, sweeping lines. Another open model is the ladies' victoria.

All the cars in the latest series have been reduced in price, despite which improvements have been made in reality. Wheelbases are longer, turning radii shorter by 12 feet, brakes, tires and batteries all have been increased in capacity and numerous detail improvements effected.

Bodies and fenders in all the Detroits are of aluminum, and in the enclosed



INTERIOR OF DETROIT BROUGHAM SHOWING TWIN CONTROLS

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models the corner panels are of rounded glass. Heavy, deep Turkish upholstery is employed in all models. The fittings for all enclosed cars include an eight-day clock, sunburst lights, Weston electric meter, Warner speedometer, smoking set, cut glass vases and so forth—those touches of completeness that go so far toward making a car attractive and comfortable to ride in.

The price of the five-passenger brougham, with duplex drive, is $3,000. The four-passenger brougham, which has single drive and only one front chair but otherwise is very similar to the five-passenger machine, costs $2,850. The "gentleman's roadster" costs $2,500 and the victoria $2,300. Models regularly equipped with worm-driven rear axles will be fitted with bevel gear drive at a reduction in price. The five-passenger brougham with bevel gear drive and forward control costs only $2,800; and the four-passenger brougham with bevel gear drive and rear control, $2,550.

Dampness that Makes Varnish "Sweat.'

If thorough ventilation of a private garage, or any other garage for that matter, is necessary to dissipate gasolene fumes, it is equally necessary for the preservation of the varnish of the cars housed within it. If the air is damp, the varnish will "sweat" and take on a sort of scum that is disastrous to the finish. The ounce of prevention in this case is an open window or two—and leave them open.

The Advantages of Long Tow Ropes.

It is not often necessary to tow a disabled car nowadays, but when it does become necessary it is a good plan to use a fairly long tow rope, particularly where horses are used to help a car out of a mud hole. The long rope permits the horses to get a better hold and the noise of the racing engine is less likely to disturb them and make them "shy."

Removing Ball or Roller Bearings.

When it becomes necessary to remove ball or roller bearings it should be remembered that it is usually the inner member of the bearing that is a force or press fit on the shaft and operations should be governed accordingly. Generally the outer member is a push fit in the housing and may be easily removed.

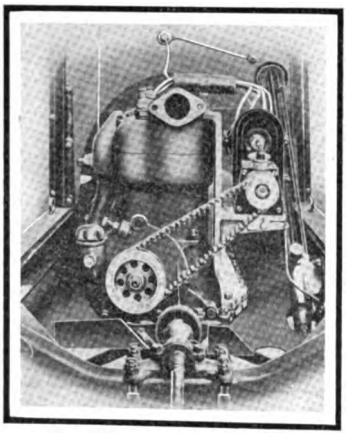
Gauge Pressure that May Mislead.

The pressure indicated by a gauge on an air pump while the pump is working usually is higher than the pressure in the tire, due to the loss through friction in the restricted air passages and the valves. The most accurate way is to get a pressure reading direct from the tire itself, thus eliminating possible causes of error.

BOSCH DEVELOPS SIMPLE FORD ENGINE ATTACHMENT

Substitution of Magneto for Coil System Rendered Easy, Leaving Ford Generator for Lights—No Machine Work Required.

For those of the legion of Ford owners who prefer high-tension ignition as supplied by the high-tension magneto with its positiveness and its simplicity, the Bosch Magneto Co. just has developed special attachments which will permit the substitution of a standard type DU4 Bosch magneto for the timer and four-unit spark coil that is a familiar feature on Ford cars. And lest it be assumed by those who are not versed in matters electrical that the change in the ignition system necessitates a pretty thorough knowledge of things electrical and things mechanical, it may be added that the operation is neither difficult nor lengthy nor expensive. It can be done inside of half a day by any motorist who prides himself on being handy with the ordinary garage tools.



BOSCH FORD ATTACHMENT

The attachment of a Bosch magneto to a Ford engine is not new, of course, though the installation work never has been as simple as it now has been made. The necessity for cutting away any of the crankcase with the resultant danger of oil leakage, has been eliminated, as has the necessity for altering any of the vital parts of the engine. The work of installation requires scarcely more than that the magneto be clamped in place and wired. As for the advantages of the high-tensison magneto: Very few persons need to have it explained that its hot spark ensures the maximum of power: that ignition of the charges is without lag; that the source of current is inexhaustible and that simplicity and positiveness of action are two of the virtues of the magneto that have served to give it its name.

Just how simple the attachment of the Bosch magneto has been rendered may be appreciated when it is stated that it is not even necessary to drill a hole. After the removal of the engine hood, the radiator, the fan and pulley and the commutator or timer, the latter being immediately discarded, the second and fourth cylinder holding bolts and the two forward cylinder head bolts are removed. It is a simple matter then to place in position the special bracket and to fasten it by replacing the bolts that have been removed. Then, when the special driving gear has been fitted to the commutator shaft by means of a pin supplied for the purpose, it remains only to place the magneto on the bracket and fasten it and to place in position the driving chain after the magneto has been properly timed. The work is so simple that it might also be tackled by a schoolboy with a knowledge of how to use a wrench.

The timing operation also is extremely simple and, as laid down by the Bosch company, is as follows: First, bring No. 1 piston to the top center position of the compression stroke. The magneto should then be turned so that the carbon distributor brush rests on No. 1 distributor segment. With the timing lever of the magneto in full retard position, slowly turn the armature in the direction of its rotation until the interrupter points are in the act of opening. At this point the chain should be attached, care being taken to see that the piston has remained at its top stroke position. The distributor disk then is replaced and the ignition cable from distributor segment No. 1 connected to cylinder No. 1, the other cables being connected to their respective cylinders. In order to permit the current being switched off to stop the engine, a dash switch is provided with the equipment which is complete down to every last bolt and screw and nut that is necessary. Full installation instructions are provided with it, as is a wiring diagram.

Another advantage of providing separate high tension ignition is that it leaves the regular low tensison Ford generator without any work to do, though it is a comparatively simple matter to so connect it with a storage battery that the oil lamps can be replaced by electric ones.

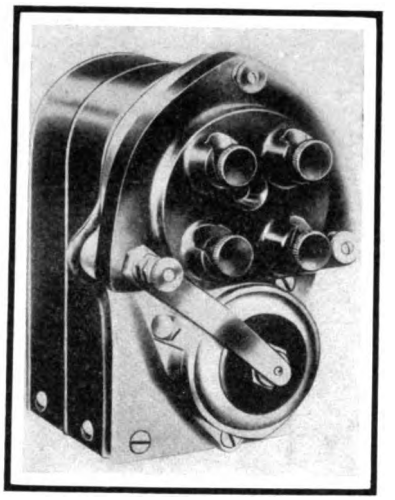
Pump Washer from Old Shoe Tongue.

Although the method must be apparent to the really wideawake person, the fact that in an emergency leather pump washer can be made out of the tongue of a shoe in case of necessity is worth chronicling—and remembering.

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breaker is attached to one end of the armature shaft, with which it rotates. Owing to the action of centrifugal force, the platinum points come in contact in a positive manner at high speed, thus permitting the use of a comparatively weak spring and materially lessening the wear on the cam.

One end of the breaker arm carries a fiber roller which is adjustable for wear. Under this construction, which, with other distinctive features, is covered by patents, the fiber roller comes in contact with a steel cam, causing the platinum points to separate and break the primary circuit. The magneto is self-contained, having both the primary and secondary windings on the armature, the result being that a fat, hot spark follows the interruption of the primary circuit.



SPLITDORF "FORD SPECIAL"

The high-tension winding of the armature is connected to a collector ring or segment, imbedded in a spool mounted on the driving end of the armature shaft. From the collector ring a carbon brush leads the current through a waterproof brush holder to the distributer disk, whence it is distributed to the spark plugs through the usual high-tension ignition cable. In the construction of the instrument particular pains have been taken to ensure against leakage of the current in the connections and cables.

Lower Priced Model Added by Cartercar.

Supplementing its larger model, which lists at $1,600, the Cartercar Co., of Pontiac, Mich., has added a new one which sells, completely equipped with electric lighting and engine starting apparatus, at $1,250. The car, on the whole, is slightly smaller than the higher priced model, though it carries a roomy five-passenger body. Needless to add, it embodies the distinctive Cartercar friction transmission which uses no clutch or gears.

RUNNING DOWN A RATTLE AND FINDING THE CAUSE

How an Owner With Sensitive Ears Traveled a Long Road to a Surprising End—What It Cost Him to Stop the Noise.

He was a man who owned a good car, drove it himself and whose pet particular hobby was the running down and eliminating of all possible sources of noise on the machine—that is, noises that were not normal and unavoidable. Squeaks and rattles were to him as a red rag to a bull, and it was his proudest boast that no stray noise ever escaped him any great length of time. But, as usual, pride preceded a fall, though perhaps the means of wringing from the noise-hunter a confession of defeat were not wholly legitimate.

One day the seeker for silence drove his car into the garage where it was housed and, pointing out the cause of an infinitesimal scraping sound that had assailed his supersensitive ear during the last few miles of a run, requested that it be eliminated forthwith. He stood on one side of the car and the foreman who took his instructions on the other. The foreman leaned carelessly against the rear mudguard and thoughtlessly tapped the sheet metal with the end of a lead-pencil, keeping time with the pulsations of the slowly running motor.

Suddenly the owner paused and bent an intently listening ear.

"Hello!" he ejaculated, "what the devil's that?"

Now, the foreman was not very slow of perception, so he at once perceived that it was the light tapping of his unseen pencil that had perturbed the noise-hunter. And he was not an old man, wherefore he had a little of the spirit of deviltry in his heart and not the strength to withstand the temptation to amuse himself.

"What the devil's what?" he answered. keeping the pencil going just a little more softly.

"Something's rattling. Can't you hear it?"

The foreman listened hard.

"Yes, I hear it," he replied. "Sound's as if it might come from the engine."

The owner went to the throttle, speeded up the motor a trifle and listened again. No sound except the beautifully even firing of a well-kept quartette of cylinders.

"H'm!" he said. "That's queer. I can't hear it now; can you?"

No, the foreman couldn't hear it now. They tried making the motor run slower, and faster, and at all sorts of speeds, but the rattle did not again become evident—that day. On various occasions thereafter, how-

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ever, when a good opportunity occurred, the foreman's pencil played a gentle tatoo on the rear mudguard—just enough to drive peace from the soul of the noise-hunter and to spur him to superhuman efforts to locate the sound. He left orders at the garage for all sorts of tearing down and delving with a view to locating the sound—all of which work was (not) done and reports duly made that there was absolutely nothing the matter with the machine. And yet, sooner or later, there would come a day when for a brief time there would be a faint, but distinct rat-tat-tat-tat-tat-tat-tat which vanished as mysteriously as it came and did not even last long enough to permit diagnosis.

The thing finally got so much on the owner's nerves that he actually began to seriously consider parting with his car and buying another in which there were no spectral sounds that defied all efforts to eliminate them. At this juncture the foreman relented.

"We've found that noise," he announced one morning, as the car was about to be driven out. "Now will you own up that I'm a better noise exterminator than you are?"

"If you can prove it to me that you speak the truth," said the owner, solemnly, "I'll own up like a man and do the regular penance round the corner."

The motor was running at its usual idling speed. The foreman was leaning idly against the rear mudguard. His pencil began the usual tapping and the owner glanced up quickly with a gleam of triumph in his eye.

"You lose!" he said, as the tapping continued.

"I win!" said the foreman. "Look here."

The victim looked, and deep understanding overspread his face. There was just a moment of tenseness, as if the outcome might perhaps be—well, not pleasant. But, after all, he was a good fellow, and it was not long before his laughter joined with the roars of the others who were in at the finish of the game. Suddenly he stopped and grew serious again.

"Who's going to pay for all that work?" he asked.

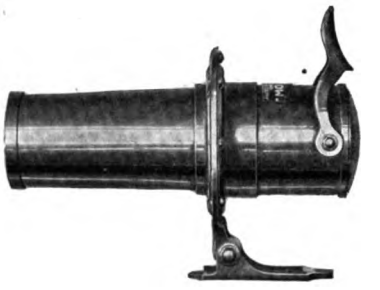
"Well, said the foreman, "you would have paid for it if it had been done—but it wasn't."

Maxim Tests Silencer for Automobile Use.

Hiram Percy Maxim, of Hartford, Conn., inventor of the gun silencer, visited Syracuse, N. Y., late last week and, using a Franklin car for the purpose, gave a public demonstration of his silencer as applied to automobiles. The Maxim silencer, of course, takes the place of the ordinary muffler, which it closely resembles in form, and permits the cut-out to be used without offending the public ears.

Here's the Newtone Maker's Motophone.

Although its Newtone motor-driven horn will not be discontinued, now that the Automobile Supply Mfg. Co., Brooklyn, N. Y., has turned to the manufacture of hand-operated mechanical horns, as stated in last week's issue of Motor World, more than a clue to the company's own sentiments is contained in its assertion that the new signal is "superior to any motor-driven horn or any other device of the class."



MECHANICALLY OPERATED MOTOPHONE

The new horn, styled the "Motophone," is shown in the accompanying illustration, which, though bringing out the gun-like form, does not reveal the fact that the mechanism is of more than passing interest, including, as it does, a spring governor which regulates the speed of the steel ratchet, the revolutions of which vibrate the diaphragm. However fast the operating lever may be moved, the wheel cannot rotate at more than its proper speed, so that the note given is uniform and steady. One of the advantages of a hand-operated horn is that it is an independent unit requiring no extraneous assistance; and another that is emphasized in the "Motophone" is durability. The makers state that a durability test was made in which 5,000,000 signals were given, and that even after this extraordinary test no adjustments were necessary. The new horn is priced at $12.

Bearing for Radial and Thrust Loads.

The production of a ball bearing that will sustain both radial and thrust loads suggests a number of knotty problems, prominent among which is the fact that if a ball is rolling on one line of contact it must slide to a greater or lesser extent on any other line of contact except that diametrically opposed to the first. By way of overcoming this difficulty, the R. I. V. Co. just has brought out a new type of bearing which is styled "Combination Radi Thrust" bearing and which is quite a little different from other forms of combined radial and thrust bearing; it is shown, so far as its outward appearance is concerned, by the accompanying illustration.



R. I. V. RADI THRUST

The entire problem would seem to have been simply and easily solved by the new bearing, for though it is only slightly wider than the standard type—inside and outside diameters remain the same—it contains two sets of balls each designed to carry separately the full load, radial and thrust, for which it is designed. In other words, one of the rows of balls operates on a surface at right angles to the other row and the surface or thrust plate on the thrust set permits of a full load up to the capacity of the balls being applied at the same time full load is sustained by the radial bearings. The new combination bearing is supplied in all the standard inside and outside diameters.

Cole Blue Book a Blue-Ribbon Catalog.

Of course, it must be that the Cole Blue Book, which just has been issued by the Cole Motor Car Co., of Indianapolis, Ind., is an automobile catalog, for the Cole people say it is. But from the beginning it bears witness to the fact that the intention of the compiler was to make an interesting catalog, one interesting even to those who may not have any particular interest in the Cole car—or any other automobile, for that matter.

It is a complete description of the Cole car, to be sure, but it is good reading and easy reading, and there is a lot of information about cars in general that is really worth while. For the man who is in a hurry to get at some particular point there is a boiled-down set of specifications at the end, without comment or trimmings. And throughout the book, which is "done" in the printer's best style, the advantages of the "standardized" system of car building are brought out clearly and convincingly. Any way it is looked at, the Cole Blue Book is a good little book, worth reading—and keeping.

Auto Parts Adds a Unit Power Plant.

The Auto Parts Mfg. Co., of Muncie, Ind., of which F. N. Boyer is president, has added a complete unit power plant to its productions. The engine employed is a block-cast, four-cylinder motor, with a bore and stroke of 3⅝ x 5 inches, respectively, developing approximately 30 horsepower.

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CAR UNDER THE GARAGE ROOF

ınd Avoiding Collisions With the Help of Turntables—
:s Conserve Floor Space—Mechanism That Makes
bout Easily—Installation Methods Made Plain.

things. That was when Day, striking out for himself from the drudgery of working in a machine shop, rented a little shop with borrowed capital and set himself up in the garage business. Since then he has always remembered that business means busy-ness—and he keeps busy.



INTERIOR INSTALLATION SHOWING HOW CAR MAY BE TURNED

Because the shop was a small one—it was fairly deep but it was narrow—cars that were driven in could not be turned once they were under the roof. For a long time Day backed cars out for his patrons. He took the responsibility of damages and damage suits that less experienced owner-drivers might have incurred—and both brakes and Providence were kind to him; he never had an accident. He became very expert at dodging door-jambs and the other cars in the garage and things, animate and inanimate, on the sidewalk.

Flames Make Necessary Quick Action.

Then one day he set to wondering what would happen in case of fire; how he would be able to get the cars under his care out into the street in a hurry if his shed started to go up in smoke. Day was a good driver; he knew he was a good driver and he knew that no good driver, regardless of his qualifications, would ever attempt to drive a car out of a garage backwards at anything faster than a snail's pace; the hazard is entirely too great; might as well burn a car as smash it—to say nothing of the risk to others and to the life of those who always flock to see flames.

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There remained nothing for him to do but to install a turntable, and he did so after a great deal of deliberation. Suffice it to say that the turntable proved a turning point in his life. Not only did it eliminate the necessity for backing cars out of the garage, thereby removing one big hazard, but it permitted him to increase his business as well, for it made possible the storing of a couple more cars. With the turntable the cars could be turned and placed accurately so as to occupy the minimum of space.

It was his practice to have cars that were driven in by their owners left on the turntable. He and his helper then turned each car and pushed it back into its allotted niche—headed for the door, or, at least, in such a position that it could be driven out behind its radiator and not in front of it.

Devices that Eliminate Maneuvering.

Long ago, Ephraim Day moved out of his little shop and into a much larger one. But he did not move into his new quarters until a turntable had been installed, for though the new garage was a large one, with plenty of room for maneuvering cars around the floor, this maneuvering was one of the evils he eliminated. Every car was turned on the turntable until it could be backed by hand to its station—either on the wash-stand or along the side wall. His patrons took no chance of accident through the careless handling of their cars by garage attendants. None of Day's patrons ever heard the time-worn, threadbare excuse, "Some one backed into your car last night, Mr. So-and-So." Day's success and the success of his garage are directly attributable to his original forethought in seeing the advantages of a turntable.

Big Turntables Will Turn Little Cars.

The turntable that Day bought and installed—he did all the work himself—was one of a dozen or more that are made by as many manufacturers. Day picked it out because it was not expensive and because he figured it was suited to his needs; it was neither too large nor too small. He put in the biggest one he could accommodate between his side walls, because he knew that there is small sense in cutting a big hole for the cat and a smaller one for the kitten. A big turntable will turn little cars, but a little one won't turn big cars. Most manufacturers make them in several sizes, and it behooves any one who would follow in the footsteps of Day to measure first and cut afterwards; to determine the longest car that it likely will be necessary to turn before going ahead.

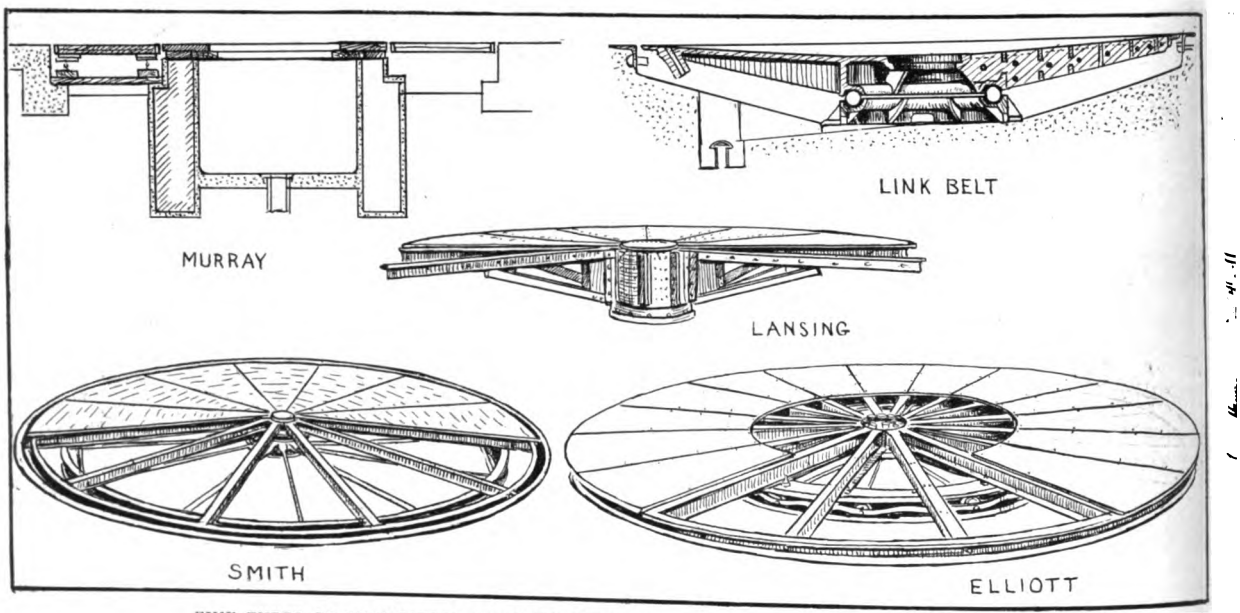
As a typical example of just how a turntable would appear in the small private garage, there are reproduced herewith two photographs showing in one case a turntable installed immediately in front of the garage doors and in the other case within the garage proper. Both of these tables are manufactured by the Canton Foundry & Machine Co., of Canton, O., and their appearance may be taken as indicative of the appearance of almost any of the others under similar circumstances.

Turntables, like everything else that can be included in the category of garage equipment, vary considerably in construction; needless to add, the construction is governed to a certain extent by the price. Some of them turn on wheels; some turn on ball bearings; some turn on plain bearings; some are flush with the floor and some are raised; some of them can be used for a double purpose—washing stand and turntable—and some of them cannot be so used. Altogether there is a wide latitude for choice—too wide, in fact, to permit the description and illustration of more than representative types in each class, in one article.

Figuring the Proper Size to Install.

First: As regards how big a turntable ought to be for a car of a certain wheelbase. It is a simple matter, of course, to measure the wheelbase and to plot the dimension on the floor, but in doing so it should be remembered that the tread also influences the necessary diameter of the turntable and this must be taken into account. Briefly, for cars up to 106 inches wheelbase, a turntable 11 feet in diameter will be required; a car with a wheelbase of 119 inches and standard tread will just go on a turntable of this size, allowing a little more than six inches for flattening of the tires at each end Hence, it is advisable to use the next larger size, which will accommodate cars up to 132 inches wheelbase. For 145, 158 and 171 inches wheelbase—the tread being standard—the turntable diameters necessary are 13, 14 and 15 feet, respectively. In most cases, however, where the wheelbase is fully up to the figures given, it is advisable to use the next larger size turntable.

It is obvious, of course, that to be of prac-

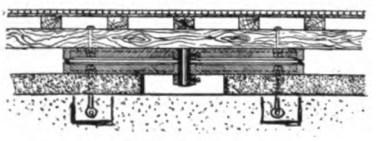


FIVE TYPES OF TURNTABLES SHOWING WIDE DIFFERENCE IN CONSTRUCTION METHODS

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The top of the table may be either steel, corrugated, or concrete or asphalt or even wood. The standard depth required for installation of the table is 12 inches, though this can be reduced to as little as eight inches at the center and six inches at the periphery.

One unusual feature of the device is that the center bearing is easily adjustable from the outside, and its adjustment permits the

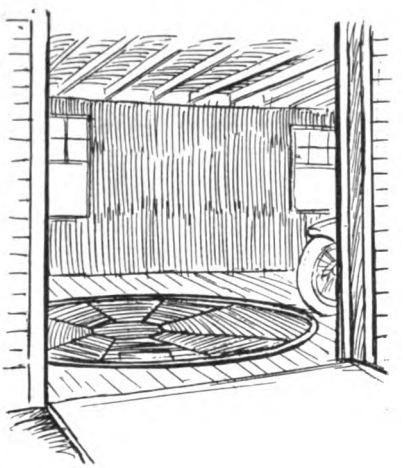


TURNER CONSTRUCTION

raising and lowering of the platform within certain limits. Thus, the settling of foundations in new buildings can be compensated for. Incidentally, the energy required to turn the table can be regulated by adjusting the bearing.

Twelve Bearings Support the Load.

In the Elliott turntable, which is manufactured by the Sterling Elliott Co., of Newton, Mass., all of the load is supported on twelve taper roller bearings, which are placed about midway between the center bearing, which supports little load, and the periphery of the table. These roller bearings are carried in "oil-less" bushings and never require attention. Hence, it is a simple matter requiring only that proper drains

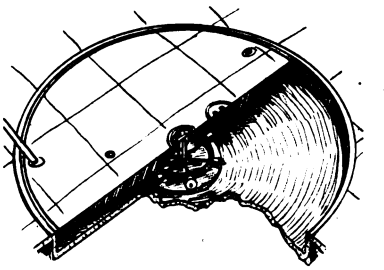


ERNST INSTALLATION

be provided, to employ the turntable also as a washing stand. The construction of the turntable itself is quite clear in the accompanynig picture, the radiating members being I-beam steel strongly fastened to the king bolt at the center. The floor is made of steel held in place by screws.

The Northern turntable, which is produced by the Northern Engineering Works of Detroit, Mich., is not unlike the Elliott in operation, the load being carried on a series of rollers placed between the center of the table and the periphery, though the construction is radically different. In the first place, the table itself is constructed of reinforced concrete; where a concrete foundation is necessary in any case, this may be an advantage, for the table top can be set at the same time the foundation is put in. The roller construction is shown clearly in the picture, which makes plain that the rollers are tapered and that friction therefore has been reduced to the minimum. This turntable, too, can be used as a wash stand, the waste water draining away through the center pin. The table is made in several sizes, from 11 to 15 feet in diameter; the depth required for all of them is 16 inches.

The Turner turntable, manufactured by the Turner Mfg. Co., of Danbury, Conn., is another in which the load is supported on bearings between the center of the table and the periphery, only in this case the bear-



NORTHERN ROLLER BEARING

ings are large diameter balls held between two races, one of which is stationary and is bolted to the foundation and the other is fastened to the table top itself. These two races, in fact, and the balls between them constitute the whole working mechanism of the turntable. Where the fireproof qualities of a steel or concrete top table are not required, a wooden top can be built up on the Turner foundation at the minimum cost, the lumber required being purchased locally. To prevent the dislodgement of either balls or races, the two are held in proper relationship with each other by means of a central king bolt which is 3½ inches in diameter.

One Ball Bearing Used in Link-Belt.

A single immense ball bearing also is used to support the load in the Link-Belt turntable manufactured by the Link-Belt Co. of Chicago, Ill., only in this case the bearing races are smaller in diameter and therefore are nearer to the center of the table. In the sectional view of the table that it shown herewith, it is plain that the top member and the upper race are cast in a single rigid piece. For convenience in ship-

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ping, however, the table top is split into three segments which afterward are bolted together.

The under race is securely fastened to the foundation, which is of concrete and is provided with a sewer connection so that the table can be used as a wash stand when necessary. The table top is drained to the center, where there is a large, removable grating. The bearing is thoroughly protected from water and grit and a hand hole is provided for cleaning the drain. The table is made in three sizes—namely, 12 feet 6 inches, 13 feet 4 inches and 14 feet 6 inches in diameter, the largest size therefore accommodating standard tread cars up to 144 inches wheelbase.

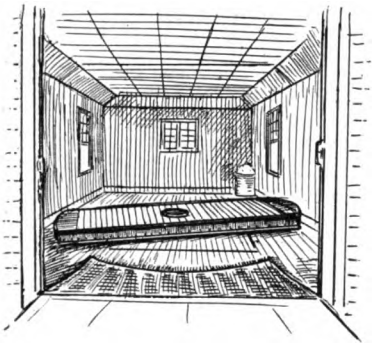
King Pin Meets the Reaction.

The Ernst turntable, which is manufactured by C. F. Ernst's Sons of Buffalo, N. Y., is another in which the load is carried on a great ball bearing, though it is placed slightly nearer to the center than are any of the others. In the sectional view of the bearing, which is reproduced herewith, the arrangement of the bearing and the component parts of the table is made plain, the reaction, occurring when a car is being driven upon the turntable, being taken by a substantial king pin in the center. In another type, constructed for installation on upper floors where the depth obtainable is limited, the reaction is taken by a second set of balls mounted beneath the ones that normally carry the load. As is the case with most of the other turntables, the bearings in the Ernst are protected from water and sand and the table can be used as a wash stand without fear of harming it. The diameters of the standard models range from 12 to 18 feet.

But One Part Needs Lubricating.

The Lansing table, which is produced by the Lansing Co., of Lansing, Mich., has its bearings entirely enclosed within the central pedestal member, as shown by the picture, and though this bearing its quite close to the center of the table, as it is in those that employ a great ball bearing, six horizontal wheels serve to support the load. The dead load is carried by 20 sheaves radiating from the central pedestal. The only part requiring lubrication is the king bolt and provision is made for applying the oil from the top through a hand hole. The depth of the pit required, including the foundation, is approximately 36 inches and the diameters of the several sizes furnished range from 12 feet 6 inches to 20 feet. In another style of Lansing turntable—it is not illustrated—the radiating members are securely fastened to a special circular track bearing on the rollers which, in turn, are mounted in another track secured to the foundation. For this type of table the depth required is only 24 inches.

The Nichols turntable, which is produced by George P. Nichols & Bro., of Chicago, Ill., is entirely different from any of the



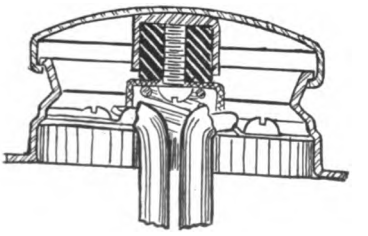
ELLIOTT PITLESS TABLE

others, its most prominent point of difference being that it requires no pit. As a matter of fact, the whole of it—or, at least, the whole of the visible part of it—is above the floor. Although it was designed essentially for use in a one-car garage—the small private garage, for instance—it can be used in a public garage where conditions prohibit the excavation of the pit necessary for other types. Incidentally, despite the fact that it is above the floor, it has no rails.

As is the case with so many of the other turntables, the load on the Nichols is supported on a central ball bearing of substantial construction, the lower race of which is set into the floor and fastened to a concrete block about three feet square. At the entrance end of the table, a single roller set nearly flush with the floor serves to relieve the strain on the king bolt when a car is being driven on, but when the car is centered the whole of the load is carried by the central bearing. The decking is yellow pine and for simplicity the runway leading to the table may be nothing more than two strips of concrete.

Push-Button that Overcomes Faults.

It is altogether likely that more than one person has "cussed" his electric signal horn



SPARTON SWITCH BUTTON

button with a great deal of fervor when it may have been due to no fault of the button at all, or rather of the construction of the button or its ability to make the necessary connection that must result in a warning growl. Most buttons of the kind are small, and it is not always easy to find them promptly with a finger, and this is particularly so when heavy driving gloves are worn; it remains, however, that if the button were properly pressed it would perform the function for which it was designed; the only necessity is to press it properly.

All of which has been remembered by the Sparks-Withington Co., of Jackson, Mich., and in bringing out a new type of button for use with its Sparton horns it has almost literally gone the limit in making the button not only easy to operate but in making it of such size that it cannot well be overlooked, let alone be missed when it is looked for, or felt for, as is more usually the case. A section of the button itself is shown by the accompanying illustration. Aside from the fact that the button is considerably larger than usual, it has another and probably more important advantage in that it will make the necessary contact regardless of whether it is pressed squarely down or only its edge is depressed. In other words, it makes no difference at what angle or what part of the button is touched, for the horn will swell its warning just the same; even mittens need have no terror for the driver who relies on his horn as much as he does on his good brakes. Externally, the button is finished in black satin enamel which makes for inconspicuous appearance combined with durability and a color that is not likely to "clash" with rich fittings.

Glycerine and Graphite for Clutches.

Fuller's earth generally is recommended for clutches that slip when they ought to grip, but something that is very nearly as desirable, and much easier to apply, is glycerine. It can be poured on the leather out of the bottle, and if there is any tendency for the clutch to grip too suddenly, a little graphite can be added to the glycerine.

Scraping Cylinders Requires Care.

When removing carbon deposits from cylinders with a scraper, great care should be taken to see that the surfaces are not marred by the tool, which generally is made of very hard material. It is not a hard job to loosen the carbon and the less force that is used the better it will be for the cylinders.

Another Tire Branch in Los Angeles.

The American Tire & Rubber Co., of Akron, Ohio, whose chief production is the American Indian red inner tube, has opened a branch at 112 East Pico street, Los Angeles. It is in charge of M. J. O'Sullivan.

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One-mile time trials—Won by Endicott (53 sec.); second, Hearne (54⅘ sec.).

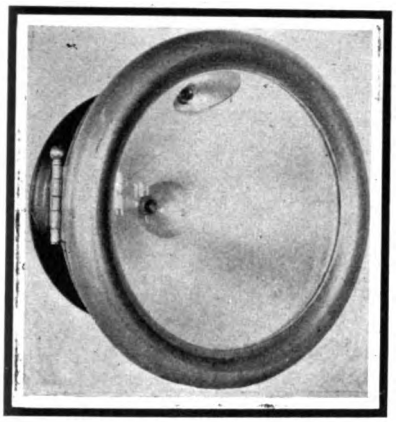
One-mile exhibition by Disbrow (Case). Time, 53⅕ seconds.

Five miles, under 450 inches—Won by Hearne; second, Heineman; third, Endicott. Time, 5:31⅗.

Three miles, two miles run, wheel changed and third mile run—Won by Endicott; second, Hearne. Time, 3:34⅗.

Guide Adds a Two-in-One Lamp.

Ill blows the wind which profits nobody, says one version of the old saw; and though the legal blast that blew out the dazzling headlights in the streets of New York and Chicago caused a little grumbling in some quarters, perhaps, it not only relieved drivers and pedestrians of not a few dan-



GUIDE DOUBLE PURPOSE LAMP

gers, but it blew a good bit of new business into the hands of the lamp manufacturers, who have been prompt to do their part in preventing the violation of the law.

One of the neatest and one of the most recent of the devices that permit a penetrating searchlight effect in the country and a useful but harmless little illumination for city streets is the double lamp that has come from the shops of the Guide Motor Lamp Mfg. Co., of Cleveland, Ohio, and rejoices in the designation "Guide special double bulb de luxe." As a matter of fact, the accompanying picture tells the story of the lamp so clearly that it is necessary only to add that the reflector, which has a 12-inch front, is fitted with a 16-candlepower main bulb and a 2-candlepower city light bulb in a little semi-reflector of its own let into the top of the main reflector; the rays from the small lamp are thrown downward on the road. The wiring is double and, of course, the lights are independently controlled. In addition to the fact that this lamp permits compliance with the law without inconvenience to the driver of the car, there is a distinct saving of current when the small light is turned on.

SMASH ADDS TO THRILLS AT KALAMAZOO RACEMEET

Benedict Rips Down Fence in Free-for-All and Burman Just Saves Himself—Moross Star to Quit Racing.

George Benedict, only ten days out of the hospital as a result of the wreck that killed Harry Endicott, at Jackson, Mich., had another very close call on Saturday last, 27th ult., on a mile dirt track in Kalamazoo, Mich., when his car got beyond his control in a free-for-all handicap event and ripped away a big slice of fence. Tearing along behind Benedict, Bob Burman did not quite steer his big Benz clear of the wrecked car and only by quick action was a double tragedy averted. As it is, Burman was so badly scared by the accident that he has announced his intention of quitting the hazardous business in which he is engaged. He is credited with having stated that when his present contract expires—it only covers one more racemeet—he will retire.

Benedict was driving a Buick at the time of the accident, and according to those who saw it, the wreck was due to the fact that he attempted to take the backstretch curve at too great speed; it is estimated that he "went into" the curve at more than 70 miles an hour. In the skid that ensued a great cloud of dust was raised and obscured Burman's vision, with the result that he only partly succeeded in avoiding the debris left by Benedict's car. Benedict sustained a broken rib and internal injuries and Burman's face and hip were cut.

The races that preceded the free-for-all handicap event that ended with Benedict's accident were mostly time trials and exhibitions and most of them were by Burman. At the wheel of his Benz he reeled off one mile in 50¼ seconds and this time was not beaten. Benedict drove the mile in a Mercedes in 55 seconds, and Harry Scott, at the wheel of a Mercer, required 1:08. As usual, Burman won nearly all the events.

Vanderbilt and Grand Prix Seem Lost.

Hope seems to be about all there is left for the holding of the Grand Prix and Vanderbilt races this year, and there is not a great deal of that. Having been unsuccessful in obtaining in New York the Peugeot entries he traveled from Savannah to obtain, President Harvey Granger, of the Savannah Automobile Club, has returned home, and as these entries are lacking, it does not seem likely that the others upon which he depended to make a list of 10 starters will materialize before the entry lists close on October 5th.

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1,056,360. Inductor Generator for Ignition Purposes. Tesla E. Podlesak, Brooklyn, N. Y., and Henry Joseph Podelsak, Chicago, Ill. Filed Sept. 25, 1901. Serial No. 76,559. (Magneto with one member carried in flywheel of motor.) 16 claims.

1,056,406. Vehicle Axle Holder. William E. Eastman, Boston, Mass. Filed June 10, 1911. Serial No. 632,501. (Spring suspension system.) 3 claims.

1,056,417. Engine Starter. Percy W. Hodgkinson, Rochester, N. Y., assignor of one-half to Jacob C. Lombard, Rochester, N. Y. Filed Feb. 3, 1912. Serial No. 675,388. (Electric starting motor concentric with flywheel and connected with shaft through clutch mechanism.) 2 claims.

1,056,518. Valve-Controlling Mechanism. Joseph Lawrence Edland, Bloomfield, N. J., assignor to Herman Jules Koehler, East Orange, N. J. Filed June 10, 1910. Serial No. 566,140. (Head-valve system.) 4 claims.

1,056,521. Spring Vehicle Wheel. William H. Fahrney, Chicago, Ill. Filed July 16, 1912. Serial No. 709,728. (Wheel with band springs about rim.) 1 claim.

1,056,550. Vehicle Wheel. David J. Jennings and Henry White, Cleveland, O. Filed Apr. 12, 1912. Serial No. 690,359. (Wheel with S-shaped spring spokes.) 2 claims.

1,056,554. Resilient Wheel. Joseph Kohler, Chicago, Ill., assignor of one-half to Kittie Collins, Chicago, Ill. Filed Apr. 6, 1912. Serial No. 688,905. (Wheel with pneumatic tire around hub.) 4 claims.

1,056,580. Cushioning Device. James N. Randle, Eugene, Ore. Filed Jan. 24, 1912, Serial No. 673,075. Renewed Jan. 22, 1913. Serial No. 743,654. (Spring suspension system.) 1 claim.

1,056,587. Vehicle Wheel. William E. Schilling, Kansas City, Mo. Filed June 12, 1911. Serial No. 632,666. (Wedge ring for securing pneumatic tire to rim.) 2 claims.

1,056,597. Cushion-Wheel. William D. Simpson, Columbia, S. C. Filed May 18, 1912. Serial No. 698,112. (Wheel with both radial and coreumferential springs.) 2 claims.

1,056,600. Engine-Starter. Gregory John Spohrer, Franklin, Pa. Filed March 19, 1912. Serial No. 684,719. (Fluid pressure starter with rack-and-pinion action.) 3 claims.

1,056,606. Fluid Transmission for Motor Vehicles. Elbert B. Vaughan and Fred T. Klasgye, Cleveland, Ohio. Filed May 15, 1912. Serial No. 697,365. (Hydraulic transmission system with turbines.) 3 claims.

1,056,631. Spring Supporter and Repairer. Lorenzo D. Corser, Bridgton, Me. Filed Nov. 21, 1912. Serial No. 732,747. (Auxiliary spring leaf and clips.) 3 claims.

1,056,639. Shock-Absorber for Vehicles. Alexander Decker, Montgomery, Pa. Filed Oct. 17, 1912. Serial No. 726,347. (Spring-mounted seat.) 4 claims.

1,056,642. Anti-Slipping Device for Vehicle Wheels. William P. Deonier, Harrah, Okla. Filed Aug. 21, 1912. Serial No. 716,245. (Sectional metal covering for tire.) 1 claim.

1,056,664. Automobile Wheel. Glade L. Griffith, Blockton, Iowa. Filed March 12, 1912. Serial No. 683,202. (Wheel with spiral springs between inner and outer rims.) 1 claim.

1,056,666. Automatic Mixer and Charger for Gas-Engines. Adolph P. Gubrud, Hudson, S. D. Filed March 15, 1911. Serial No. 614,711. (Pump system for feeding fuel and air.) 7 claims.

1,056,690. Internal-Combustion Engine. Frederick O. Kilgore, Somerville, Mass. Filed May 28, 1912. Serial No. 700,161. (Motor with two-diameter cylinder and piston and rotary valve.) 13 claims.

1,056,699. Internal-Combustion Engine. Otto Lietzenmayer, Munich, Germany. Filed March 4, 1907. Serial No. 360,455. (Fuel injection system.) 4 claims.

1,056,799. Engine-Starter. John D. Kneedler, Sioux City, Iowa. Filed Feb. 29, 1912. Serial No. 680,708. (Air starter with gear drive.) 6 claims.

1,056,804. Change-Speed Gearing for Motor Cars. Vincenzo Lancia, Turin, Italy. Filed March 11, 1911. Serial No. 613,755. (Change speed gearing with direct drive on all speeds.) 6 claims.

1,056,873. Hand Wheel. Charles Wirt, Germantown, Pa., assignor, by mesne assignments, to The Cutler-Hammer Mfg. Co., Milwaukee, Wis., a corporation of Wisconsin. Filed May 29, 1906. Serial No. 319,272. (Steering wheel with rim formed of sheet metal.) 5 claims.

1,056,874. Trunnion Suspension for Radiators. Jas. E. Woodbridge, Bridgehampton, N. Y., assignor, by mesne assignments, to F. I. A. T., Poughkeepsie, N. Y., a corporation of New York. Filed June 28, 1907. Serial No. 381,330. (Radiator suspension with ball-and-socket trunnions.) 3 claims.

1,056,922. Clutch. Joseph Roi Marchesseault, Moosup, Conn. Filed Jan. 2, 1912. Serial No. 668,937. (Fluid clutch for hydraulic transmission system.) 5 claims.

1,056,994. Vehicle Wheel. Victor J. Hultquist, Bellevue, Pa. Filed Nov. 16, 1911. Serial No. 660,636. (Wheel with pneumatic cushion around hub.) 5 claims.

1,057,009. Spark-Producing Mechanism for Internal-Combustion Engines. Lewis T. Rhoades, Mont Clare, Pa. Filed Nov. 7, 1912. Serial No. 729,937. (Interrupter with moving and stationary magnets.) 6 claims.

1,057,130. Shock-Absorber for Automobiles. Andrew Bohm, Morristown, N. J. Filed Oct. 21, 1911. Serial No. 655,918. (Friction shock-absorber.) 6 claims.

1,057,044. Pneumatic Anti-Slip Device for Power Driven Vehicles. Benjamin Douglass, Jr., Orange, N. J. Filed Jan. 16, 1913. Serial No. 742,321. (Exhaust pressure road sander.) 3 claims.

1,057,047. Vehicle Wheel. George J. Engert, Spokane, Wash. Filed Jan. 30, 1912. Serial No. 674,406. (Wheel with S-shaped spring spokes.) 1 claim.

1,057,063. Internal-Combustion Engine. Hans Knudsen, London, England. Filed Nov. 18, 1911. Serial No. 660,976. (Means for air-cooling pistons.) 2 claims.

1,057,083. Vehicle Tire. Max Cyrus Overman, New York, N. Y. Filed Nov. 4, 1911. Serial No. 658,459. (Cushion tire with internal annular air chamber and deeply serrated tread.) 7 claims.

1,057,092. Resilient Wheel. Fredereick M. Ross, Oakley, Ohio, assignor of one-half to Willard W. Baxter, Newport, Ky. Filed Jan. 15, 1912. Serial No. 671,239. (Wheel with spring-supported hub.) 2 claims.

1,057,105. Shock-Absorber for Vehicles. Joseph Wolpert, New Brunswick, N. J., assignor to Joseph F. Wolpert and Edward A. Meagher, New Brunswick, N. J. Filed May 14, 1912. Serial No. 697,130. (Double-armer friction shock-absorber.) 5 claims.

1,057,127. Motor Vehicle. Philip T. Dodge, Washington, D. C. Filed Sept. 25, 1908. Serial No. 454,782. (Limit stop for steering gears.) 5 claims.

1,057,228. Dirigible Headlight for Vehicles.) Jas. Austin Ellison, Wilmington, Del. Filed Sept. 7, 1912. Serial No. 719,069. (Headlights moved by steering gear.) 10 claims.

1,057,232. Tire. John R. Gammeter, Akron, Ohio, assignor, by mesne assignments, to the B. F. Goodrich Co., New York, N. Y., a corporation of New York. Filed July 8, 1911. Serial No. 637,426. (Cord tire construction.) 8 claims.

1,057,254. Carburetter. William H. McAndrews, Chicago, Ill. Filed Nov. 3, 1905. Serial No. 285,738. (Air pressure carburetter control.) 2 claims.

1,057,292. Shock-Absorber. Charles N. Sowden, Guantanamo, Cuba. Filed June 12, 1912. Serial No. 703,156. (Double-Armed Shock Absorber with friction disks.) 4 claims.

1,057,294. Radiator. Emil Carl Friedrich Streichert, Lockport, N. Y., assignor to The Harrison Radiator Co., Lockport, N. Y., a corporation of New York. Filed Oct. 16, 1911. Serial No. 654,962. (Sheet metal radiator construction.) 1 claim.

1,057,297. Rotary-Valve Packing. Eugene Henri Tartrais, Montmorency, France. Filed June 15, 1912. Serial No. 703,852. (Means for making rotary valves gas-tight.) 1 claim .

1,057,300. Wheel. Clarence L. Tomlinson, Portland, Ore., assignor to Northwestern Wheel & Wagon Co., Bellingham, Wash., a corporation. Filed April 3, 1912. Serial No. 688,297. (Wheel with tapered expanding hub member for tightening spokes.) 1 claim.

1,057,388. Emergency Automobile-Tire. Frank L. Bigsby, Kirksville, Mo. Filed Oct. 3, 1911. Serial No. 652,673. (Fastening device for emergency tire.) 2 claims.

1,057,398. Vehicle Tire. Grover C. Allison, Louisville, Ohio. Filed Jan. 22, 1912. Serial No. 672,753. (Solid tire with annular tongue fitting annular slot in rim.) 1 claim.

1,057,399. Valve-Gear for Internal-Combustion Engines. Daniel Appel, East Cleveland, Ohio. Continuation of application Serial No. 571,472, filed July 11, 1910. This application filed May 31, 1912. Serial No. 700,555. (Piston valve and eccentric operating means.) 10 claims.

1,057,409. Headlight. Frank Buchanan, Syracuse, N. Y. Filed April 24, 1911. Serial No. 622,878. (Electric headlight construction.) 8 claims.

1,057,439. Tire-Patching Device. Gustave J. Martel, Chicago, Ill. Filed June 5, 1911. Serial No. 631,274. (Blow-out patch and securing means.) 2 claims.

1,057,440. Tire-Patching Device. Gustave J. Martel, Chicago, Ill. Filed June 5, 1911. Serial No. 631,275. (Blow-out patch and securing means.) 1 claim.

1,057,442. Sleeve-Type Two-Cycle Engine. Clarence D. Miller, Philadelphia, Pa., assignor of one-third to Harry F. Haviland and one-third to Warren J. Miller, Philadelphia, Pa. Filed Feb. 7, 1911. Serial No. 607,137. (Sleeve valve two-cycle motor.) 3 claims.

1,057,451. Tire-Filling Machine. Elmer Oliver, Daytona, Fla. Filed Dec. 23, 1911. Serial No. 667,565. (Machine for injecting filling into pneumatic tires.) 6 claims.

1,057,452. Shock-Absorber. Adolph Peteler, New York, N. Y. Filed Nov. 26, 1912. Serial No. 733,594. (Hydraulic shock absorber.) 7 claims.

1,057,466. Power-Transmission Mechanism. Clarence W. Taylor, Chicago, Ill., assignor to Agnes Poage Taylor, Chicago, Ill. Filed Nov. 18, 1912. Serial No. 731,934. (Roller clutch rear axle construction.) 3 claims.

1,057,467. Vehicle Tire. Charles S. Turner, Akron, Ohio, assignor to The Firestone Tire & Rubber Co., Akron, Ohio, a corporation of Ohio. Filed Feb. 6, 1911. Serial No. 606,983. (Bolted flange solid tire.) 1 claim.

STATEMENT OF OWNERSHIP.

Statement of the ownership, management, etc., of the Motor World, published weekly at New York, N. Y. Printed as required by the Act of Congress, August 24, 1912.

Name of editor, R. G. Betts.

Post Office Address, 1600 Broadway, New York, N. Y.

Managing Editor, R. G. Betts.

Business Managers, A. B. Swetland, 1600 Broadway, New York, N. Y., and F. V. Clark, 1600 Broadway, New York, N. Y.

Publishers, Motor World Publishing Company, 1600 Broadway, New York, N. Y.

Owners: All stock, except qualifying stock of directors, held by the A. B. Swetland Company, 1600 Broadway, New York, N. Y.

Known bondholders, mortgagees and other security holders, holding one per cent. or more of total amount of bonds, mortgages or other securities:—None.

Signed, Motor World Publishing Company, F. V. Clark, Business Manager.

Sworn to and subscribed to before me this 22nd day of September, 1913. Leah Goldman, Commissioner of Deeds, No. 71. Commission expires February, 1915.

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Miles in Competition

One question in a million brains

All over this country there are men asking the same question *you* are asking yourself. In the stone front city salesroom; in the small town garage; in the offices and factories, serious-minded, thinking men are asking; "What is to be the future of the motor car business?"

Stronger and stronger glares the spot light of truth on the situation. More and more the public sees and realizes the truth. The answer to the question is found today in the public confidence. The dealer who can not see what the public sees; the dealer who fails to hear what the public says, will get a sad answer in the future. The same applies to the manufacturer. Opinions may differ in details, but the fact remains that the manufacturer who has proven his honesty, sincerity, and his here-to-stayness is the one who is being elevated to the highest level of public confidence today.

The methods of manufacturers and their selling policies decide their measure of true worth—or lack of it.

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The future of the motor car business is *good*.

Good for what?

Good for the good builder and good dealer.

You simply can't be a good dealer for a bad builder. Your hard work and cleverness can not outweigh the faults of the builder. Why spend your money and your labor to try and make good for a bad builder?

More cars than ever before will be bought this coming season. The educated public will buy them. You can't fool them. You only fool yourself in trying to do that.

The public wants its money's worth; it wants to buy where it has confidence in the car builder, the car's reputation and the prestige and rating of the manufacturer.

A car can rise no higher than its source, its factory.

A dealer can rise no higher than his car.

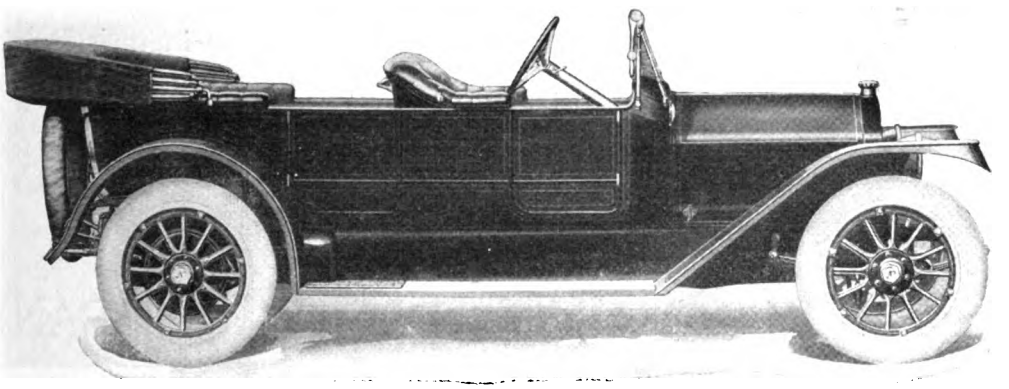
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It is inevitable that the reputable builder with square methods of dealing with customers and who produces the greatest value in his cars, is the one who will have the confidence of the public. The *National* wins business and customers for you.

We repeat: For a car of quality, power in abundance, speed in emergencies, dependability, reliable and always efficient service, perfect control, convenience and comfort, there is no better car built than the *National*.

This is a matter of record, in tests and actual demonstrations of all kinds. This is guaranteed by a thirteen-year-old company with unimpeachable rating and good will. The *National* company is stable; it is here to stay because it is right in its methods of giving the public the one service that counts—*quality*.

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Every garage proprietor and superintendent should have the new Ball Bearing Garage Manual, now in its third edition. Either one, or all of these books, will be sent free on request. Drop us a line now.

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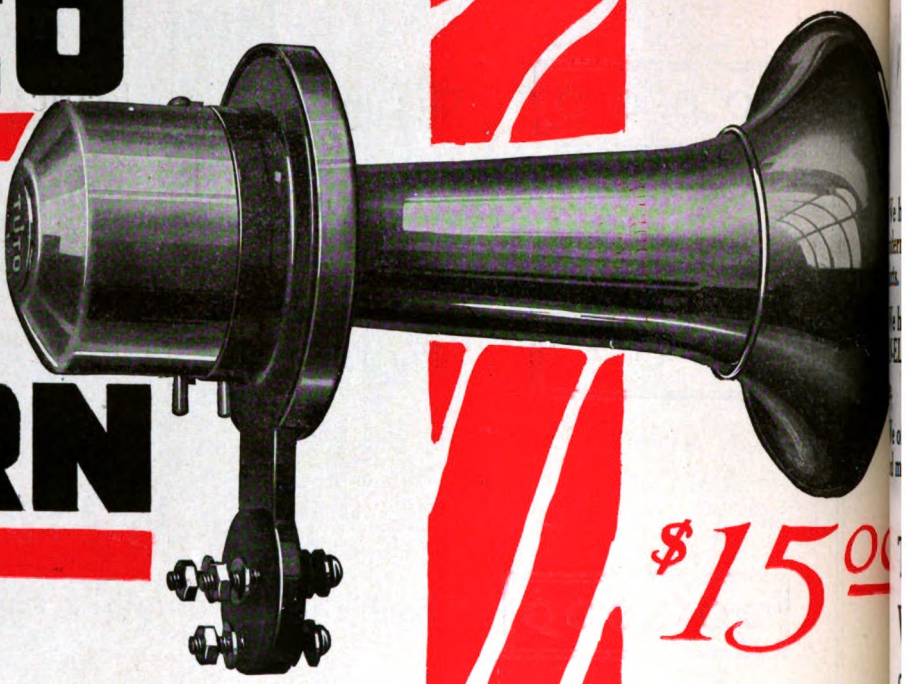
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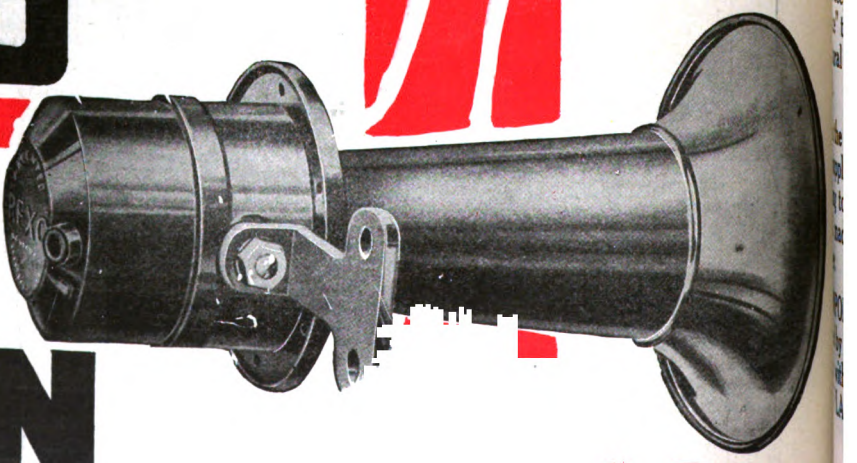


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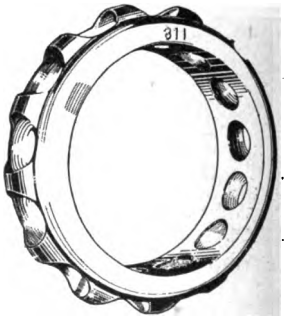
THE real merit of Gurney Ball Bearings is best understood when each of the four essentials is considered by itself as to the functions it performs; then in relation to the others and the functions they perform in the general scheme of a ball bearing.

EACH Gurney Bearing has **a Full Complement of Balls** so that its load capacity is in no way impaired. By the use of the Gurney one piece separator, it is practical to run the balls much closer together than with any other type separator.

EXHAUSTIVE experiments have demonstrated that a **Full Depth Raceway** 4 per cent. greater in radius than the ball brings about the most efficient relation between the two. Any variation more or less than 4 per cent. either decreases load capacity or increases friction. If the race contour be closer to the ball curve than 4 per cent. the area of contact between the ball and the raceway is increased and the friction correspondingly becomes excessive. If the raceways conform less closely to the ball curve the area of contact is decreased sufficiently to lessen the carrying capacity of the bearing without materially reducing the friction.

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IN considering ball bearings always bear in mind that more important even than the obvious essentials mentioned above is the question of raceway contour—for just as far as you fall short of right contour just so much do you fail to realize the full efficiency to which you are entitled.

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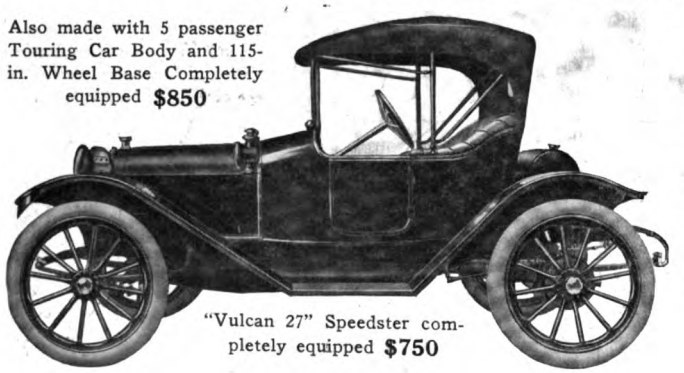
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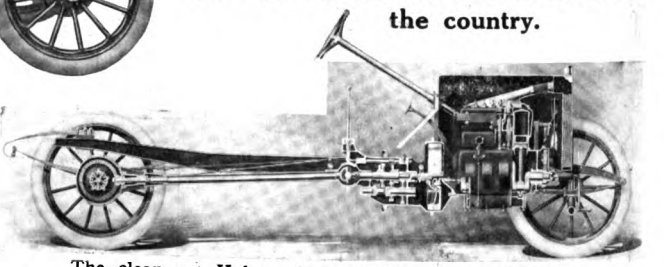
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Also made with 5 passenger Touring Car Body and 115-in. Wheel Base Completely equipped **$850**



"Vulcan 27" Speedster completely equipped **$750**

"The World's Greatest Light Car"



The clean cut Vulcan Chassis—Study the construction.

The Vulcan Platform

27.4 H. P.—S. A. E. rating.
3⅜ in. Bore—5 in. Stroke.
Unit Power Plant—3 point suspension.
105 in. Wheel Base.
32 x 3½ Tires all round.
3 Speed Sliding Gear Transmission.
5 Pinion, Bevel Gear Differential.
Left Side Drive.
Center Control.
"Streamline" Bodies.

Built strong and durable.
Pleasing and graceful lines.
Simple in design and construction.
Easy to operate and steer.
Will turn in 15 foot radius.
Comfortable to ride in.
A smooth running, vibrationless motor.
Silent in its action.
Powerful and speedy.
Economical on gas, oil and tires.
Will climb ANY hill.
Economical factory management.
A sane sales policy.
Greatest efficiency throughout the organization.

—consequently—

Greatest value for the money

FITS THE TREMENDOUS DEMAND

Thousands of Dealers and prospective owners have been watching and waiting for the right car at the right price. YOU have often predicted that SOME ONE would bring out a car that would adequately fill the great popular demand. Others have hit all around the mark, but the Vulcan is the first to hit the bull's-eye.

A TRULY REMARKABLE CAR

A machine which takes its place in the front rank immediately—FAR IN ADVANCE of anything yet announced. Will climb ANY hill where the wheels will hold, and stand the SEVEREST tests to which a car can be subjected. BUILT, not "assembled" only. A car with NO OBJECTIONABLE FEATURES.

WE CAN DELIVER THE GOODS

The Vulcan is being manufactured on an extensive scale. It will be one of the most important factors in the light car field for 1914. In addition to our present large factories, we are preparing to invest millions in additional capacity. Arrangements are already in force, whereby the growth of the plant will keep steady pace with the demands of our Dealers.

The Vulcan is not of "Mushroom Growth"—YEARS have been spent in the perfection of the car and equipping to manufacture in LARGE QUANTITIES.

This announcement is NOT premature, but has been purposely withheld until the progress reached the point when deliveries of 1914 models could be positively assured.

DEALERS GET IN LINE

This is YOUR opportunity, but QUICK ACTION is imperative—we shall not oversell our capacity—we are appointing only a limited number of Dealers—no more than we are able to supply with a reasonable number of cars each during the season. The Vulcan Dealer's Agreement is the FAIREST EVER OFFERED. Protects the DEALER as well as the Producer. Automatic renewal feature makes the dealer a PERMANENT part of the Sales Organization. WIRE by Night Message for option on your City or Town, pending arrival of letter.

SEND FOR CATALOG

SEND FOR 1914 Complete Illustrated CATALOG, describing the product, our facilities and methods.



VULCAN MFG CO.

PAINESVILLE, OHIO, U. S. A.

Lock Box MW 477

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CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"





The solid link provides a smooth bearing. Friction is thus minimized and smooth running insured.

The strength of these links makes breaking almost impossible. If one should break, replacing is so simple a matter that anyone can do it.

Write for Catalog

CORBIN SCREW CORPORATION

THE AMERICAN HARDWARE CORPORATION, Successor

NEW BRITAIN, CONN.

Branches: NEW YORK CHICAGO PHILADELPHIA

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MOTOPHONE

A Mechanically Operated Horn

Efficient Economical Simple

NO Battery Expenses
Motor Troubles

NO Electrical Wiring
Adjustments



A mechanical horn superior to any motor driven horn or any other warning device.

$12.00

A loud steady blast is emitted by a slight touch of the lever—as compelling as any motor driven horn. Conceived—perfected—manufactured and guaranteed by the largest auto horn manufacturer in the world.

America's Pioneer in the Auto-Horn Industry

Automobile Supply Manufacturing Company

220 Taaffe Place INCORPORATED 1904 BROOKLYN, N. Y.

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TOPHONE

A Mechanically Operated Horn

producing the Motophone horn has been to offer to warning signal to be of perpetual use to the owner.

product is the acme of mechanical skill, which has ished by nine years of manufacturing experience in als.

'OPHONE" horn operates mechanically. A loud, s emitted by a slight touch of the lever, eliminating care of the electric motor, the re-charging of stor- adjustments and cost of maintenance. It means a the mot rist whose experience in the use of the ces now on the market has been a continuous ible.

quite alive to the fact that the public required an e that would, at all times, under all conditions, give alarm, with no liability of failure.

us mechanism embodied in the "MOTOPHONE" al, and our aim has been to develop a signal t e any other of its class, and that it should meet the ne trade in general for its merits alone.

ry severe test was made to determine its bility and the result was that over 0,000 signals were obtained, after h no adjustments were required or loose noticed.

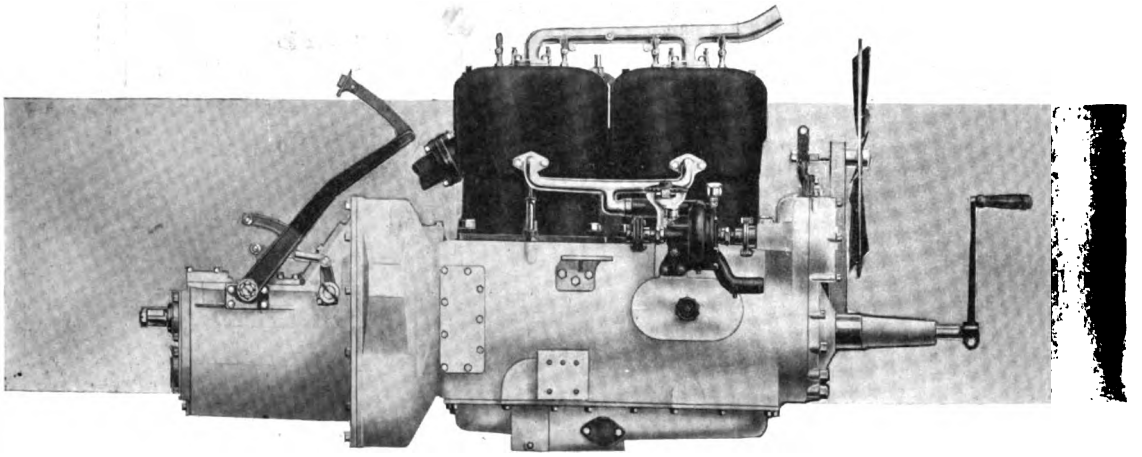
arge and small quantities will receive prompt at- veries start Oct. 15.

Supply Manufacturing Company

INCORPORATED 1904 BROOKLYN, N. Y.

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Ergon Motors



Ergon Standards

Ergon Motors are built in three sizes, each size available for prompt delivery in unit plant type. Each motor is of the four cylinder, four cycle, L head type, cylinders cast in pairs. Cooling is accomplished by water pump and lubrication by fore feed splash system of exceptional efficiency. Model C, 3¾ x 4½; Model CX, 4 x 4½, and the Model D, 4⅜ x 6.

It has been found best to depend upon outside manufacturers for certain special parts of Ergon Motors. For instance:

Bearings

In the unit plant type motors we use Timken Bearings in the transmission; the clutch is supported upon F & S Bearings. All bushings are made of the best obtainable anti-friction and anti-wear material to be had.

Crank Shafts

The Driggs-Seabury Ordnance Corporation, of Sharon, Pa., forge our crank shafts and connecting rods. Their reputation for this sort of work is second to none in the country.

Clutch and Gearset

Models C and CX are equipped with multiple disc clutches in oil. Model D employs the Brown-Lipe dry-plate clutch. All motors in the unit plant type have three speed selective type transmission. When specified, Model D will be supplied as an independent sub-frame motor.

Silent Chain

In the Model D a Renold Silent Chain drives the magneto, pump and valve actuating mechanism, replacing timing gears.

Valves

All valves are enclosed in such a manner that they are readily accessible. The valves themselves are exceptionally large.

In General

In their general makeup Ergon Motors show a very high development in motor standards. In performance they invariably exceed expectations. Motor building is our specialty and we have bent every effort to make Ergon Motors stand for the best in that particular field of endeavor. We have had to enlarge our factory recently to take care of our rapidly growing business, and a thing we point to with pride is the fact that Ergon Motors have made good in every instance, both on pleasure cars and trucks.

Correspondence Solicited

HAZARD MOTOR MANUFACTURING COMPANY ROCHESTER NEW YORK



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'he Motor The Tires!

owner to pump up his tires
re is a 20 to 90 H. P. motor
id pumping belongs to the
hand cranking, etc. Hand
use of insufficient inflation—
ee-fourths of the tire repairs
uthorities.

mer's comfort, temper, time
talling the

Cylinder LOGG e Pump

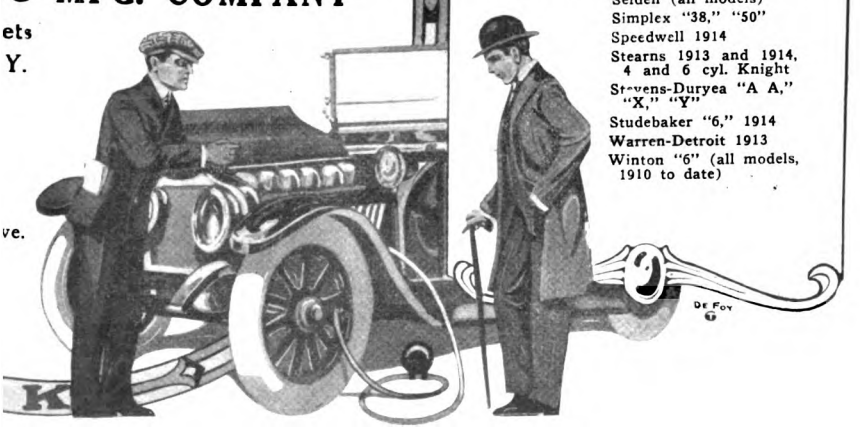
lard Tire Pump—the choice
y maker of high grade cars.
en by four years of success-

rate. Attachments are supplied for practically every model now in use. Manufacturers, dealers and garages should investigate our proposition. Send for our book —"Air On Tap."

G MFG. COMPANY

ets
Y.

ve.



Evidence

The Makers of These High Grade Cars Use and Endorse The Standard

Kellogg Tire Pump:

Austin Automobile Co.
Chalmers Motor Co.
Dayton Motor Co.
Edwards-Knight Motor Car Co.
Haynes Motor Car Co.
McFarlan Motor Car Co.
Oakland Motor Car Co.
Packard Motor Car Co.
Palmer-Singer Mfg. Co.
Peerless Motor Car Co.
Staver Carriage Co.
Stevens-Duryea Co.
Winton Motor Car Co.

Attachments Supplied for Attaching The Standard

Kellogg Tire Pump

to the Following Makes:

Abbott-Detroit 1912-'13, 44-50
American 1912-'13
Apperson 1912
Bergdoll "30"
Buick 1914 models in preparation
Cadillac 1911-'12-'13-'14
Chalmers "30" (36 and 6 cyl. attachment from Chalmers factory)
Cole 1912-'13, "40," "50," "60"
F. I. A. T. "54," "55," "56"
Flanders "6"
Haynes 1913, "23," "24"
Hudson "33," "37," "54," and 1914
Imperial 1914
Jackson 1913
Kissell 1913, 4 cyl. and 6 cyl.
Locomobile, I, L, M, R
Lozier 1911-'12-'13-'14—all models
Marmon 1912
Oakland 1913—all models
Packard "30 No. 1248," "1338," "1348," "238"
Paige-Detroit 1913
Pierce-Arrow (all models 1907 to date)
Selden (all models)
Simplex "38," "50"
Speedwell 1914
Stearns 1913 and 1914, 4 and 6 cyl. Knight
Stevens-Duryea "A A," "X," "Y"
Studebaker "6," 1914
Warren-Detroit 1913
Winton "6" (all models, 1910 to date)

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A New Six–for

Every Feature Standard and the Highest of its Class in Quality and Reputation



5 Passenger Touring Car,

¶ The **S & M** Six is a new car in name, in value, in sales opportunities; but it is already an established car by reason that it is constructed throughout of standard parts that represent the very highest achievement of the best American parts makers. There is nothing in the **S & M** Six that has not already made its reputation.

¶ This car is being built in Detroit; it embraces nothing but 1914 features; has not a left-over anywhere; will not strive for big quantity production; and is built by men who, in addition to manufacturing experience, have had years of valuable experience in the selling end of the business of importing the highest priced, highest grade car in the world—the Rolls-Royce—and high quality American cars. In fact the **S & M** is brought out because their experience shows that at a MEDIUM price the market heretofore has offered no Six with all the right qualifications.

¶ The right qualifications, as you will admit, are as follows: first—a Six—it is the ideal type; second—the best standard parts of the acknowledged specialists; third—light weight, meaning low upkeep; fourth—extraordinary beauty; lastly—a right price.

S. & M. MOTOR CO., Inc.

Specifications:

CONTINENTAL

¶ America's Standard Motor — the finest six cylinder engine produced. Noiseless, light in weight but a giant of energy, developing 58 h. p. by brake test. Three point suspension. Cylinders cast in sets of three. Enclosed valves.

TIMKEN

¶ Acknowledged to be the best in axles and bearings—actually without competition. A guarantee of maximum safety and durability at the points of greatest stress.

BROWN-LIPE

¶ Transmission of highest grade, superior in workmanship, produced by a plant in which $3,000,000 has been invested. No "manufactured" car at any reasonable price can compete with the work of these transmission specialists.

GEMMER

¶ Steering gears specified by over 50% of the leading automobile firms of America. A solid assurance of satisfaction and safety. Known to all motorists as a leader.

JESCO

¶ The ideal lighting and starting system. Does not abuse the batteries, but starts the motor unfailingly. Lightest in weight and most compact in construction.

WARNER

¶ The best speedometer made, accurate, reliable, used on the highest priced cars.

MAYO

¶ Cell honeycomb, handsome, trouble proof. Backed by a big, strong company. No better radiator made.

McCUE

¶ Wire wheels — the latest improvement in motor car construction. Add resiliency and increase tire mileage.

ROSTAND

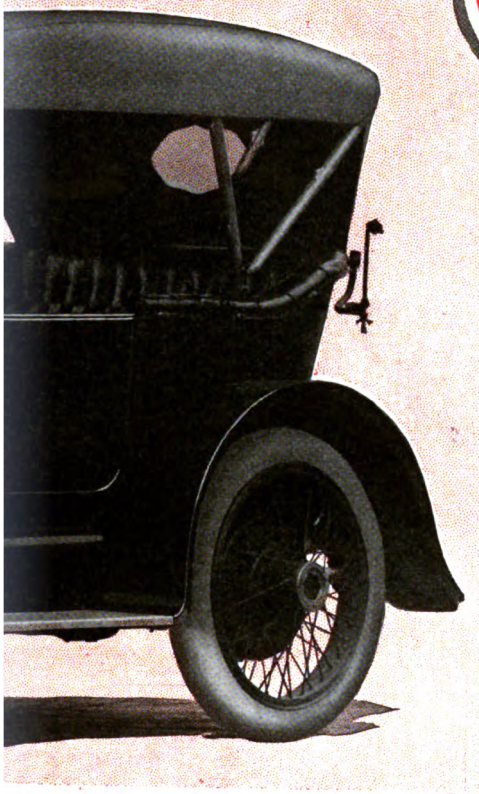
¶ A windshield beyond comparison, the neatest and most attractive manufactured. Rain vision, clear vision, ventilating. Mirror-plate glass set in solid cast bronze frame, enameled. Special fittings attach top to shield, doing away with leather straps.

¶ All these features are of unparalleled excellence. Yet they are but a few of all the S & M offers. Among others may be listed:

Full floating rear axle.
Aluminum hood.
14 vital parts of chrome nickel steel.
130-inch wheelbase.
Left-hand drive, center control.
Short turning radius.
Bosch dual ignition.
German silver radiator casing.
Brewster-style fenders.
2 Thermos bottles.
Genuine hand-buffed leather upholstering.

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Market



ınd the specifications at the left tell the
ɜt and dealer. Continental for motors;
emmer for steering gears; Brown-Lipe
ors; Warner for speedometers; McCue
er, show that, irrespective of price, the
l by any car of American or European

ve not been able heretofore to supply.
re to be manufacturers, but an intimate
ands is behind the **S & M** Six. That—
from years of experience, that the car
ɜts, is the best car it is possible to pro-
oduce.

ɜ. But there are no other cars with the
hroughout.

ices:

Roadster, 2 passenger.....$2485.00
Speedster, 2 " $2485.00
7 passenger, $3750.00

etroit, Michigan

For Dealers:

¶ "A New Six for a New Market" is not a catch phrase. It is based on the six years' experience of the manufacturers of the **S & M.** There are numerous Sixes in the market—a great many of them experiments, and not one of them answering, as does the **S & M,** the steady demand for something that looks better and is better in action — at a better price.

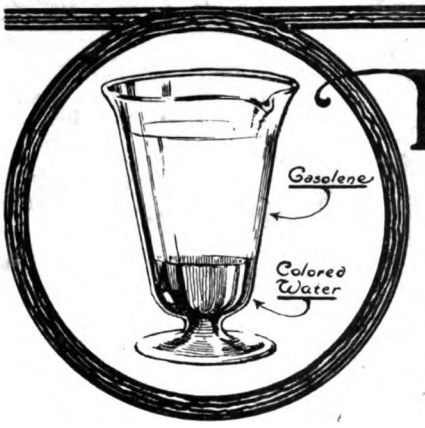
¶ It goes without saying that such a Six must be a proved car. Some other Sixes are proved—by age—at the cost of a big overhead. The **S & M** is proved—by the science and acknowledged pre-eminence of the specialists who build its parts—without a cent of excess overhead.

¶ The **S & M** offers to the better class of dealers a Quality Car without competition in appearance, in price, and in material. Every purchaser of a car of the class of the **S & M** knows without argument that every one of its parts is the best procurable. The list of firms building these parts is the soundest "selling talk" that ever backed up any automobile.

¶ ***And the S & M plan of co-operation with dealers is so much better that you should learn of it immediately. Every dealer in quality cars should get the S & M proposition at once.***

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Water in Gasolene



Efficiency of Ellis Gravity Separation Method. A Test.

Into a graduated glass nearly full of gasolene a small quantity of water, colored red to distinguish it, was poured. In spite of repeated efforts to make it mix with the gasolene the red water sank to the bottom. When the contents of the glass were run through the Purifier only the uncolored liquid came out. The red liquid, in exactly the same quantity as originally measured into the glass, drained out of the precipitation chamber when the valve was opened.

NO matter how good carburetors may be made or how perfectly they are adjusted there always will be as much carburetor trouble as now unless some adequate remedy is applied to the fuel.

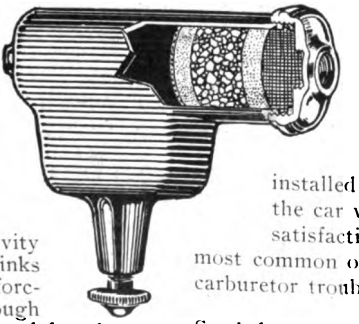
The carburetor itself is seldom to blame for carburetor trouble. It is the impurities in commercial gasolene that make trouble.

Dirt, grit and sediment may be eliminated from fuel by careful screening but there still is the water to contend with.

However water gets into gasolene, whether by carelessness or by condensation of the atmosphere in a gas tank, the fact remains that in a short time enough accumulates in a carburetor to make trouble.

The Ellis Gasolene Purifier

by means of a series of screens and filters, catches all solid substances that find their way into commercial gasolene. The chamber on the lower side of the purifier provides a means of **TRAPPING, BY GRAVITY, ALL THE WATER** in the fuel.



Water has a higher Specific Gravity than gasolene and accordingly sinks to the bottom of the chamber, forcing the fuel to float over it through the screens and filters, purified and free from everything that can cause trouble, to the carburetor. A valve is provided to drain off, at convenient intervals, the water thus trapped.

Every motorist has a vital need for an ELLIS GASOLENE PURIFIER as an insurance against carburetor trouble. Every dealer should do his utmost to have one installed on every car he sells, because the car will give its owner far greater satisfaction when insured against the most common of all motor car ills . . . . carburetor trouble.

Send for an ELLIS for your demonstrator. Its benefits will become apparent at once. Our dealer's proposition is interesting and profitable; do you want it?

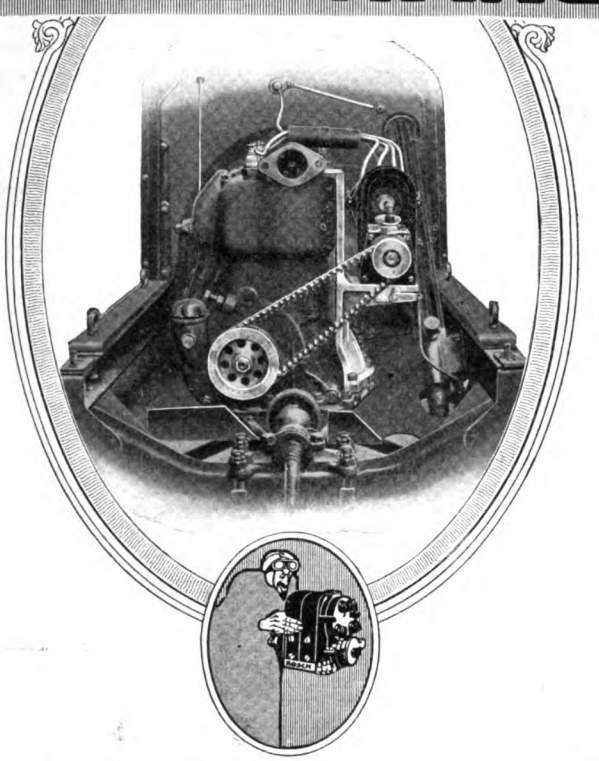
THE NATIONAL SALES COMPANY

45 Milk Street, Boston, Mass.

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BOSCH-FORD ATTACHMENT

A
Bosch Magneto
For Ignition



The
Ford Generator
For Lighting

Gives Ford Cars Maximum Efficiency

THE Bosch-Ford System has been designed to meet an urgent appeal for a more efficient and reliable ignition system, one that would eliminate preignition, overheating and the inherent difficulties and harmful effects of unsynchronized ignition.

The Bosch-Ford Attachment employs the Bosch Magneto and permits of this world renowned system being easily adapted. The average motorist can install it and requires only the tools of the usual tool kit to do so.

Every Ford owner who is interested in gaining added efficiency, and all those engaged in the sale and repair of motor cars and accessories, should investigate this proposition.

Illustrated Literature Sent on Your Request

BOSCH MAGNETO CO., 224 West 46th Street, New York

Chicago Detroit San Francisco Toronto

Service Stations in all important centers

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PENNSYLVANIA Oilproof VACUUM CUP TIRES

Their Success to Date

Their Future Programme

Did You Ever See Tires Make So Good ?



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of Vacuum Cup Tires has been an enviable and promi-
start, it is in this fourth season, now closing, that their
ded and rounded out so as to command the general atten-
ıe whole body politic of the automobile world.

he present factory having been overtaken early this year,
y building was erected in which mechanical equipment is
ll another building, larger than the old factory and the
vas soon after projected as a result of the strong growth
r building is now nearing completion.

production that will result from the operation of the new factories
assurance of the same quality being maintained, which has brought
ly to the front, their success will be greatly amplified, to say the
ing of next season.

› the consistently remarkable service records during the big season just
r, emphasized by almost total absence of adjustment claims, the printed
ıtee attached to each Vacuum Cup Tire has been raised 500 miles to

—4,500 MILES—

tOACTIVE ON ALL TIRES SOLD SINCE MAY 1, 1913

ı Rubber Co., Jeannette, Pa.

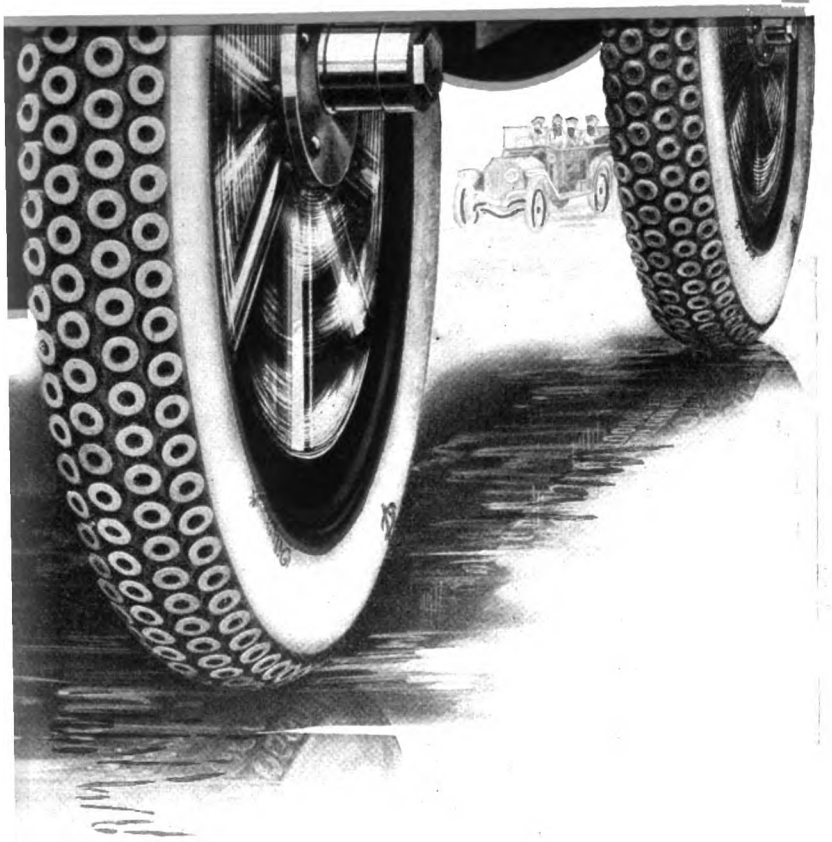
Liberty Avenue
Euclid Avenue
erson Avenue
lichigan Avenue
Minneapolis, 34 S. 8th Street
Kansas City, Mo., 514 E. 15th Street
Omaha, 215 S. 20th Street
Seattle, Armour Building

YLVANIA RUBBER COMPANY OF NEW YORK
Boston, 149 Berkeley Street

Dallas, 2111 Commerce Street

YLVANIA RUBBER COMPANY OF CALIFORNIA
Los Angeles, 930 S. Main Street

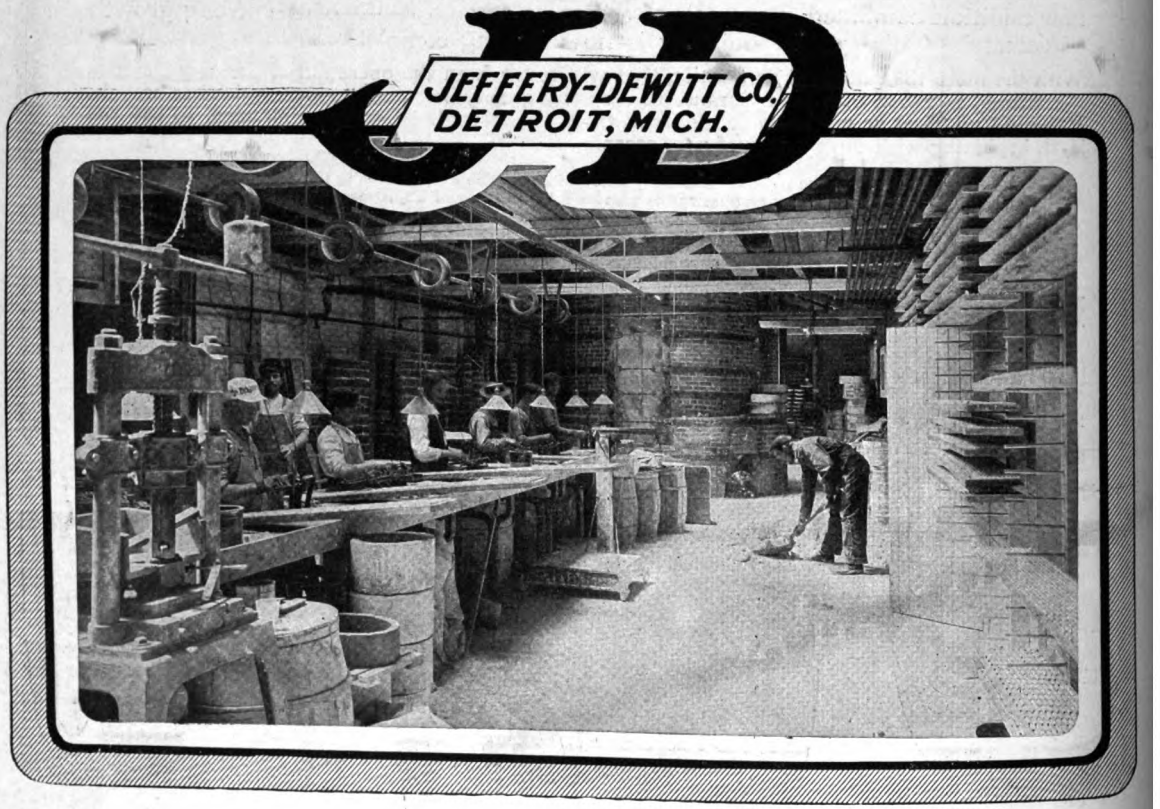
ɜpendent Company with an independent selling policy



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Jeffery-Dewitt SPARK PLUGS in the Making

Kiln Shed and Sizing Room. Here the cylindrical blanks of clay that come from the throwing room are graded down to uniform dimensions before being passed on to the turning department. In the middle background is shown one of the kilns sealed, ready for firing. The temperature of this kiln is raised to approximately 2700 degrees and about 72 hours elapses from the time the fires are first started until the kiln is cool enough for the porcelains to be removed.





At 75c. These Two Plugs Lead the World

The porcelain, made by secret formula and of imported ingredients, will stand up under the most severe conditions; the metal parts, case-hardened, cannot be bruised; and the electrodes, of special alloy, will withstand the current much longer and carry it far better than the old-style electrodes commonly found in plugs of this price.

The Conical Type Spark Plugs, so called because the cylinder end of the porcelain is conical in form, give excellent results. They have gained wide popularity.

The Petticoat Type, also named from the shape of the cylinder end of the porcelain, affords extra insulating surface around the central electrode. For oily motors, this plug, with the closed end, is the best plug made.

Both Conical and Petticoat types may also be had with platinum points, at 50 cents extra.

***Dealers:** Jeffery-Dewitt plugs come in many types to suit all motors. Full descriptions will be found in our free literature.*



JEFFERY DEWITT COMPANY

65 Butler Avenue, Detroit, U. S. A.

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SPARTON

THE ELECTRIC SIGNAL DE LUXE

A BIG POWERFUL MOTOR DRIVEN SIGNAL

FOUR DIFFERENT TYPES

SELLING FROM TEN TO FIFTEEN DOLLARS

DASH AND UNDER HOOD MODELS FOR ALL CARS



MODEL "B" $10.00 PAT'D

SPARKS-WITHINGTON COMPANY

JACKSON, MICH.

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That publication serves the manufacturer best which helps the dealer most



DICTATED TO M. J. T.

COPY
....

August 30th, 1913

Dear Sir:-

It is not our policy, as a rule, to especially recommend any trade journals. We have been so much impressed, however, by the good things in "MOTOR WORLD", that we feel that it is for the "good of the service" to recommend that you subscribe for, or at least purchase it regularly.

"MOTOR WORLD" seems to take up the dealer's problems and solve them better than any other trade paper we know of

We are only sorry that we did not take this matter up with you sometime ago. Each issue is full of timely hints and helps. Its wide-awake merchandising department contains live, practical suggestions that will appeal to every MARMON dealer.

We have been particularly impressed by the "Reilley Stories" which have recently been running and feel that they are the best of their kind.

Hoping that you will accept this suggestion, if you have not been reading "MOTOR WORLD" regularly in the past, we are,

Yours very truly,

NORDYKE & MARMON COMPANY.

By

COPY OF THIS LETTER SENT TO ALL DEALERS. F S

Sidney B. Bowman Automobile Co.,
New York, N. Y.

MOTOR WORLD
No Waste
Circulation

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That publication serves the manufacturer best which helps the dealer most

MARMON'S letter hits the nail squarely on the head. "Motor World seems to take up the dealer's problems and solve them better than....."

Can any publication serve manufacturers half as advantageously as the one which best helps the men who ultimately sell their goods? If you sell direct to dealers, how better can you approach them than through the advertising pages of their favorite trade paper?

If you sell to car manufacturers, the dealer ultimately sells your goods. Can he feel that the use of your product on the cars he sells is a benefit to his customers unless you point out such benefits and educate him as to their advantages? And in so doing could you select a better medium than the one which helps him in the conduct of his business?

Whether the dealer is your customer or your customer's customer, he is the most logical link in your business chain for you to strengthen with all the selling arguments you can give him.....and Motor World's argument is just this:

That publication serves the manufacturer best which helps the dealer most.

MOTOR WORLD PUBLISHING COMPANY

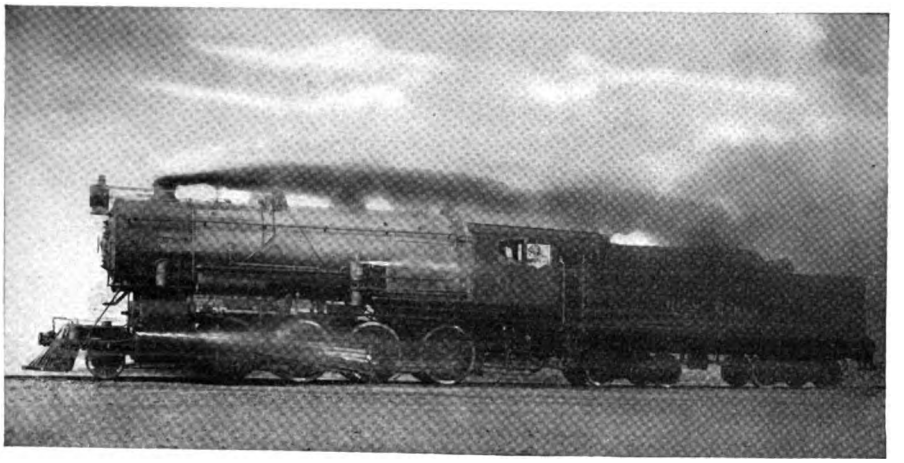
W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

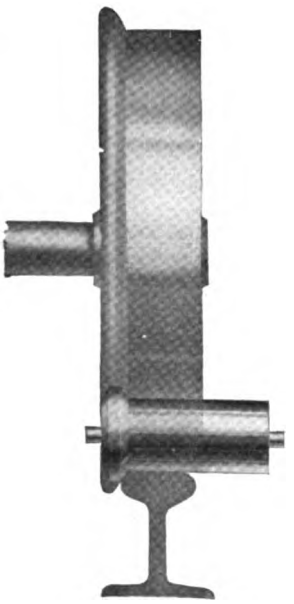
B. MATHEWSON
Advertising Manager
1600 Broadway, New York



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"BOWER SAVES POWER"





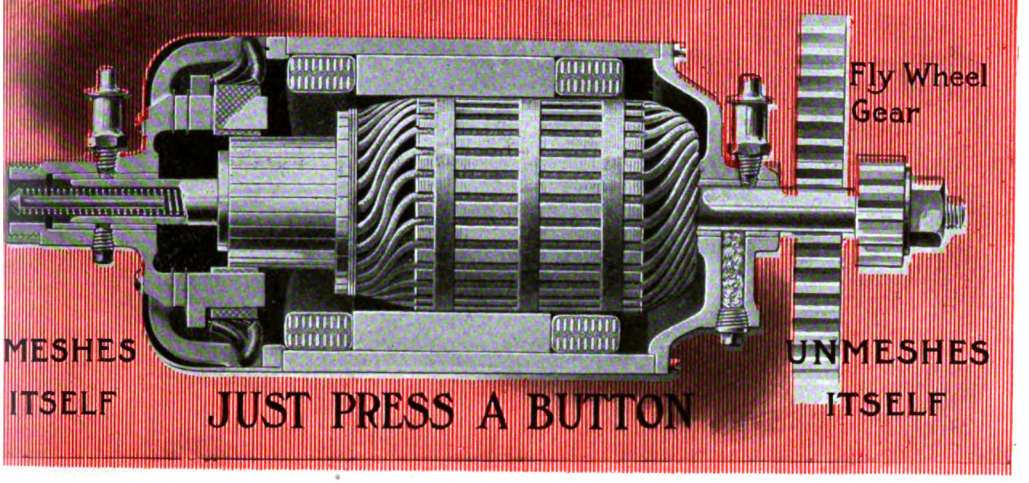
¶ At every hour of the day and night, 200-ton locomotives, traveling a mile a minute or more, are held on the track and guided around curves by the flanges on the wheels—the same principle that is used in the Bower Roller Bearing.

BOWER ROLLER BEARING CO.

Detroit, Michigan

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RUSHMORE



LANCIA

cars for 1914
will be equipped with the

RUSHMORE

Starting and Lighting System

Sig. Lancia visited all the American starter factories last winter, and after thorough investigation pronounced the Rushmore System years ahead of all others in principle, design and construction. Forthcoming Lancia cars will be arranged to carry Rushmore equipment as a unit with the engine.

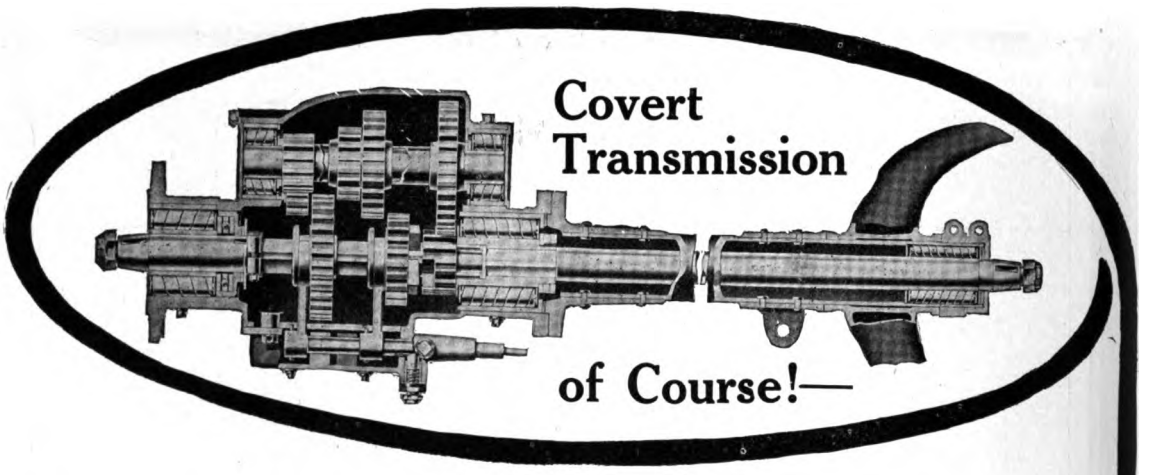
Four other European cars, whose mere names are a guarantee of quality, will announce standard Rushmore equipment before the end of the year.

The Rushmore System is being adopted by numerous American manufacturers hitherto using other systems of inferior efficiency and reliability.

ıshmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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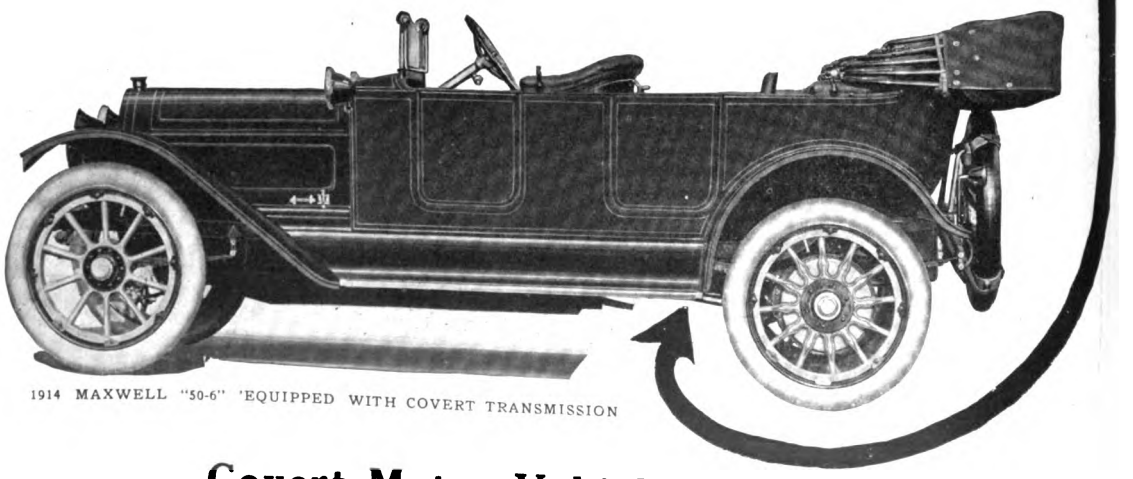


Maxwell Advertises this "50-6" as "Sweetest Running Thing on Wheels"

COVERT TRANSMISSIONS, with a smooth, quiet operation born of perfected design, the finest materials and a highly trained and skilled corps of mechanics, contribute materially to the "Sweet Running" of the Maxwell 50-6.

MANY OTHER leading manufacturers of luxurious pleasure cars, and sturdy trucks, have tried and found COVERT Transmissions best fitted to meet their exacting requirements.

ADVANTAGES in the way of established reputation for honest goods at fair prices, assured deliveries and fair treatment in all cases, should be carefully weighed before deciding upon this very important part of your chassis.

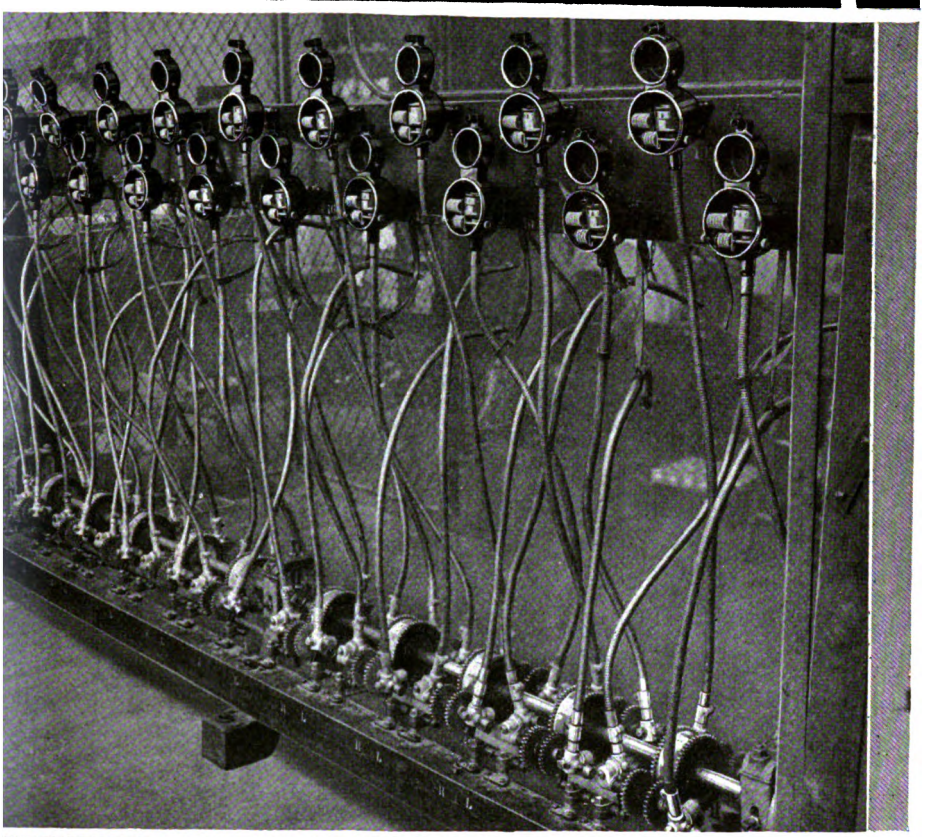


1914 MAXWELL "50-6" EQUIPPED WITH COVERT TRANSMISSION

Covert Motor Vehicle Company

Sales Office, Detroit, Mich. **Factory, Lockport, N. Y.**

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VARNER

ALITY AUTO-METER

g Surplus Speed Capacity

of every Warner Auto-
ust be proven absolutely
most severe speed tests
ert inspectors pass it for
and shipment.
structed testing machine
ed for thoroughly trying
instrument. Sixty miles
motor car speed. This
e of 150 miles per hour.
ner has a surplus speed
nt., in which it has been

Absolute accuracy and precision are the qualifications demanded in the test. Speed indicating dials or mileage odometers that show even one-tenth of a mile error are discarded. The swivel joint must work perfectly. The flexible shaft must deliver a constant even pull. The slightest indication of wear in any part sends the whole instrument to the scrapheap.

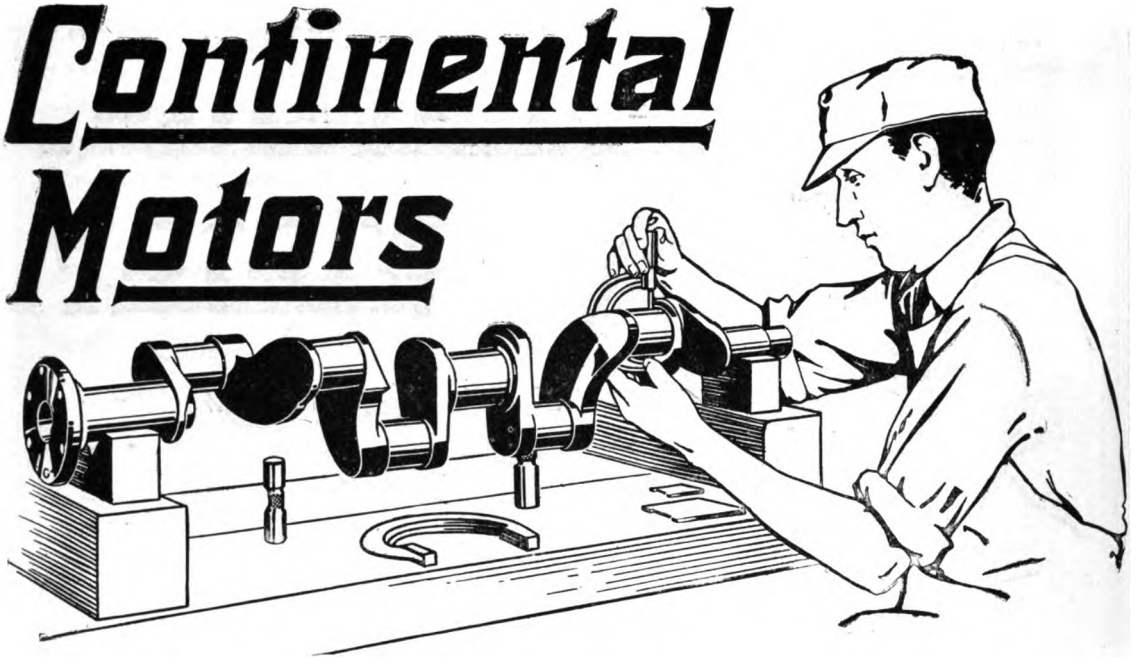
No other speedometer on the market is so carefully constructed nor subjected to such expensive and scientific tests as the Warner Auto-Meter.

Service Stations in all important cities all over the world

e Warner Auto-Meter Factory, Beloit, Wisconsin

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Continental Motors



The Final Test of Fitness

With fingers delicate as those of a lacemaker, with calipers and gauges recording fractions of a thousandth part of an inch, he checks off size, shape, form—37 dimensions in all. This inspector of finished crankshafts is an autocrat whose word is final—a "Guardian of the Faith" placed in the Continental. And the crankshaft is but one of the 1292 listed parts that go into the assembly of this famous motor.

The motors you *hear* are not Continental Motors

Noise in a motor is the protest of the mechanism against the negligence of the maker. Thanks to the watchfulness of this workingman and his fellows, Continental Motors are practically noiseless. Continental carefulness lathes, grinds, polishes, measures, analyses until all the 1292 parts are so accurately fitted that they operate with the quiet purr of an electric fan.

CONTINENTAL MOTORS ★ Powerful as the Nation ★ AMERICA'S STANDARD

Over sixty leading engineers are specifying more than 40,000 Continental Motors for 1914—in order to give you what you ought to have for service and satisfaction.

Every *buyer* knows he is getting a downright *best* car or truck when it is built around the Continental Motor.

Every *dealer* can get such a car or truck by handling one of the sixty-odd established makes now using Continental, or by *specifying Continental.*

CONTINENTAL MOTOR MFG. CO.

Detroit, Michigan

Factories: Detroit and Muskegon, Mich.

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Two Dollars Makes $30



With a Cox Oxygen Carbon Cleaner you remove a spark plug in each cylinder and insert the small metal nozzle of the cleaner. Turn on the oxygen, regulate its flow by the valve, light it with a piece of burning paper or a wax taper and feed the flame around on the inside walls of the cylinders, over the valve ports, etc. The flame will reach the most remote corners and after from six to ten minutes the cylinder will be cleared of its carbon deposits and be as clean as a new silver dollar. There is not the slightest possibility of damaging the motor; this we positively guarantee.

This is the kind of money you can make if you will replace old, obsolete methods with up-to-date practice in the conduct of your garage and repair-shop.

This is the kind of profit you can make, and besides, you can do so much better work that your customers will send their friends to you to have the carbon removed from the cylinders of their cars.

And you do not have to hold up the use of their cars more than an hour at the outside.

The above will give you an idea of the improved service you can give your customers, as well also the money you can make by so doing.

Here, in brief, is a summing up of the proposition, so you can see whether or not it is to your advantage to install at once a Cox Oxygen Carbon Cleaner.

Cost of apparatus complete . . . $25
Cost of Oxygen, refilling tank with oxygen, each $2

NOTE: Tanks are loaned to you and you are charged only for refills at above rates by your local distributor.

Each tank contains enough oxygen to clean properly from 35 to 40 cylinders, and the time required to do the work is from 6 to 10 minutes per cylinder. Any man, helper or boy is competent to do the work. We positively guarantee that the use of the Cox Oxygen Carbon Cleaner cannot cause the slightest harm to a cylinder or any part of it.

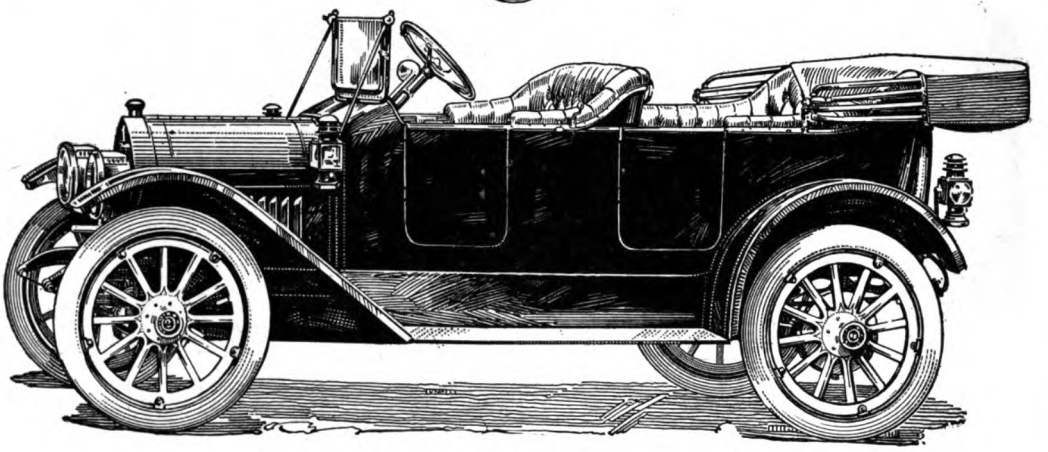
Write or wire for further particulars. Act at once for we are now working almost to capacity to take care of orders on hand. Be the first in your vicinity and get this work coming before someone else cuts in on it.

COX BRASS MFG. COMPANY, Albany, N. Y.

1777 Broadway, New York City **870 Woodward Avenue, Detroit, Mich.**

COX OXYGEN CARBON CLEANER

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EMPIRE

"The Little Aristocrat"

Completely Equipped

Now $900

New Series Model 31 Empire, for the Season of 1914

A larger, more beautiful car with every luxury and equipment

Basic principles of design and construction unchanged; severest tests and hundreds of thousands of miles proved them right. *But a score of refinements and improvements* are incorporated in the new series Model "31" EMPIRE for 1914 that make it still a better car than last season's EMPIRE, and it sells for less.

Quadrupled output and quantity buying enables us to add to the beauty, size and value of the car and yet to reduce the price by fifty dollars---the biggest value yet offered to dealers and automobile buyers.

Dealers, there remains some open territory. Our broad, liberal sales plan offers a rare opportunity for a permanent connection. Tomorrow may be too late to secure territory.

Completely Equipped $900 Including

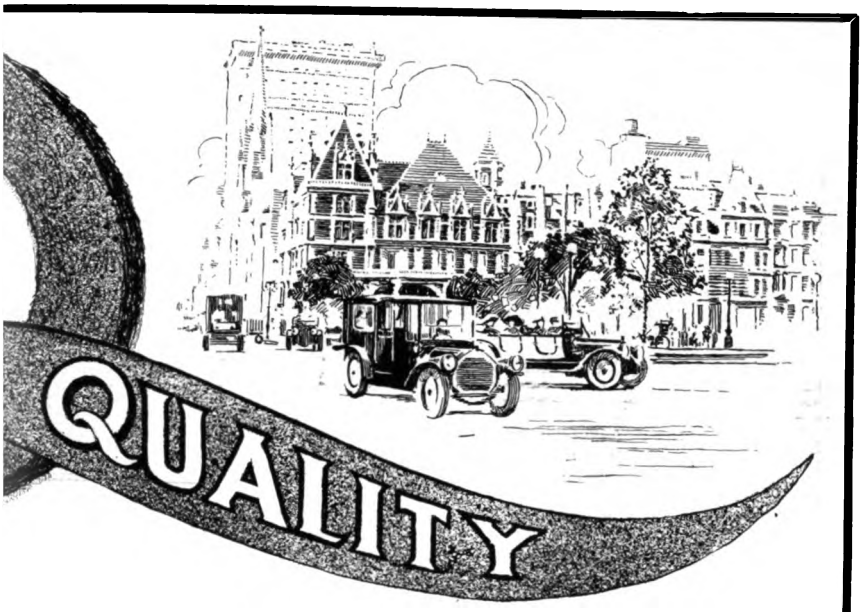
Demountable Rims	Unit Power Plant	Stewart Speedometer	Eisemann Magneto
Mohair Top	Rain Vision Windshield	Prest-O-Lite Tank	Double Tire Irons
Top Envelope	Tool and Tire Kits	Gas Head Lights	Oil Sight Feed
110 in. Wheel Base	Extra Rim	Oil Side and Tail Lamps	Dash Air Adjustment

Write for Our Advance Catalogue for 1914 and for a Copy of Our Illustrated Transcontinental Empire Tour Book

Empire Automobile Company

448 N. Capitol Ave., Indianapolis, U. S. A.

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in cost between Booth Quality Washers
/ kind is trifling . . . but there is all the
e world in the quality and service of the
uality Washers are made of the finest
l felt.

:e of washers is a comparatively simple
Booth Felt Washers QUALITY is the
racteristic of their material and service.

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TRADE MARK
LT WASHERS
Manufactured by
N. E. BOOTH
14 Pacific Street, Brooklyn, N. Y.
Canadian Office and Factory
OTH FELT CO., Ltd., Gananoque, Ontario

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FEDDERS RADIATORS

FEDDERS RADIATORS won their reputation for efficiency while the automobile industry was comparatively young. In those days the radiator of an automobile had a heavier burden placed upon it than nowadays. Bearings and many other things were comparatively crude, causing a loss of energy through more or less unfavorable working conditions. One of the first results of unfavorable working conditions in a motor is premature heating. Fedders radiators, good as they were in those days, efficient under unfavorable circumstances, are as much better now as are the motors which they serve.

Now that automobiles are showing a tendency toward standardization, Fedders Radiators are becoming more popular with manufacturers. Before adopting a certain standard, manufacturers are pretty sure that part is the best that can be had. Fedders Radiators are standing the acid test.

The policy in vogue at the Fedders Works, that of co-operation between our engineers and your engineers and designers, has worked out to the advantage of all concerned. Write us about your radiator problems; the probabilities are that together we can solve them most satisfactorily.

The Fedders Manufacturing Works
Buffalo, New York

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Announcing the acquisition of THE McCUE Co *by the* HOUK MANUFACTURING Co



The HOUK WHEEL

As announced through the press of the country last week, control of The McCue Company was sold to Mr. George W. Houk, of Philadelphia, and reorganized and refinanced under the name of the Houk Manufacturing Company. Aside from the entrance into the company of Mr. Houk, this reorganization brings about no change in the personnel of the old company either as to its holdings or its operating management. What it does bring to the company which is of greatest import to the consumer of wire wheels is the right to all of the Rudge-Whitworth patents and particularly those covering triple-spoke lacing and the one positive automatic locking device for detachable wheels on the market.

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TO PRODUCE A WIRE WHEEL that can be commercially guaranteed without using methods and devices covered by these two particular patents is impossible, and it was a firm realization of this fact, after months of research, investigation and development, that brought about this change. The Houk wheel (as the product will be known hereafter), is simply a refinement and development of the old McCue product, so improved and refined principally by the use of these Rudge-Whitworth features. That the company was faithful in its determination to market only such product as inevitably must live up to the wide claims of superiority possessed by a wire wheel of proper construction, is indelibly shown in the fact that the original organizers thereof were willing to give up control in order to become possessed of the rights to manufacture under the only methods known that insure a dependable and efficient wire wheel.

Patents

When the present management assumed charge it was soon realized that, without these rights, their product would be a makeshift, and then, convinced that such rights could emanate legally only from Mr. Houk, negotiations were straightway put under way that consummated in the organization of the Houk Manufacturing Company—which is entirely separate and apart in every detail, both as to holdings and manufacturing, from the Rudge-Whitworth proposition which Mr. Houk maintains in Philadelphia.

The volume of wire wheel business recently placed by a number of the leading automobile manufacturers is remarkable, considering the comparatively recent acceptance of the wire wheel by the buying public in this country, and a large part of this business being tentative upon the clearing of the situation, both as regards volume and infringement, the plans consummated last week were obviously logical to a large continuance of the wire wheel industry.

Construction

All of which brings us to a discussion of what is **the most important phase of wire wheel construction today, the value of triple spoke lacing,** and of the use of a positive, automatic locking device.

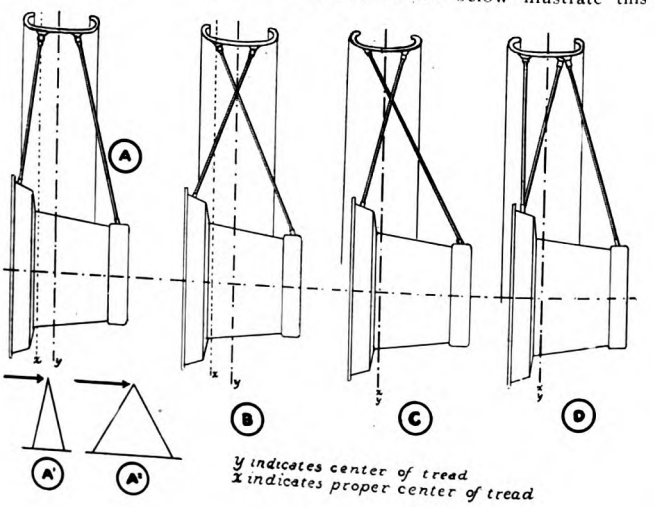
Besides supporting the weight of a car or sustaining the radial load, in operation, a wheel performs two other very important functions.

First, it propels the car by transmitting the driving torque from the axle to the road surface. Second, it withstands thrusts when the line of driving is changed or when side sway occurs which is due to driving over ruts or from skidding.

TRIPLE-SPOKE LACING

It is the fact that it is necessary for a wheel to be able to withstand these radically different and varying loads that presented the biggest problem to the construction of wire wheels—which problem has been solved by resorting to triple spoke lacing.

The four diagrams shown below illustrate this



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point perfectly and simply—for after all the problem is really a very simple one.

Development

In sketch "A" we show the first method of wire wheel construction, which was discarded years ago as inefficient. In this double spoke lacing it will be noticed that the angle at the points of contact of spokes and hub and spokes and rim are very broad. Note below figures A-1 and A-2, if pressure be applied at the peak of the pyramid, as indicated by the arrow, it is obvious that A-2 will withstand a much greater strain than A-1.

A-1 indicates the construction as it existed in double spoke lacing, while A-2 indicates the construction as it should exist.

Of course, the angles of these spokes in this construction could be sharpened by bringing the spokes closer together at the rim, but by adopting this method the spokes would be brought so close together in the rim as to weaken the holding capacity of the metal in the rim and threaten its stability.

The spokes must be a certain fixed distance apart in the rim, and the acceptance of this fact was largely responsible for the troubles encountered.

In an attempt to overcome this difficulty, spokes have been crossed as indicated in B. This crossing of the spokes may give the desired angularity to withstand thrusts but if the angles are maintained any wise equal to provide the desired equal strength in either direction, the tread cannot be brought to maintain the same position as in wooden spoke practice. To offset the rim in respect to the center of the hub in order to maintain the same tread as employed in wooden wheel practice, resort has been made to unequal angularity of the two sets of spokes and even to an unequal number of spokes in the two sets, in the attempt to keep them in mechanical balance, as indicated in figure C.

Impractical Under Stress

Suppose it is granted that a statically staple wheel may be designed after this manner, yet when subjected to continued driving, radial load carrying and side thrusts, it has been found by experience that a sacrifice of strength in one way or another is inevitable.

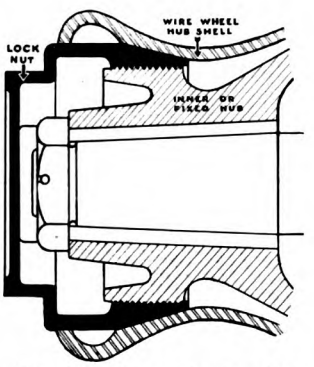
Successful Design

The failure of these methods finally resulted in the perfecting of the triple spoke lacing, as indicated in figure D. In this construction the spokes which are laced at an angle carry the side thrusts, while the circle of spokes which are laced at right angles to the driving line are relieved of all stress due to side thrust and, while carrying their proportion of the radial load, are designed especially to transmit the torsional strains of driving.

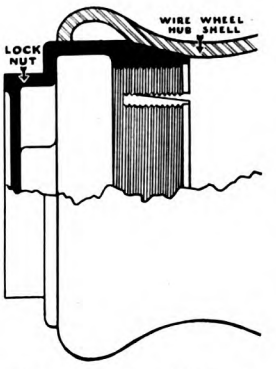
Strength

This admits of a maintenance of the tread just the same as in the wooden wheel and at the same time gives proper angularity to the thrust carrying spokes to enable the wheel as an assembled unit to possess practically fifteen times the thrust carrying capacity of a wooden wheel and practically five times the radial and driving capacity of the wooden wheel.

The facts in the case are all provable, both mathematically and by test, and if anybody is interested in the figures necessary to prove our statements, beyond a doubt, our engineering department will be very glad to go into details covering the question.



This shows inner and outer hubs locked in place.



This shows outer hub and lock nut off the axle.

Sectional drawings of the new **HOUK WIRE WHEEL HUB**, showing the **AUTOMATIC LOCK NUT**. Should this nut be left slack the pressure of the wheel hub shell on the nut clamps the nut between itself and the threaded hub on the line contact, setting up a differential creeping action, which forces the nut to lag behind and so to tighten itself on the wheel. When the nut is tight, obviously the creeping action ceases.

LOCKING DEVICE

One of the most essential features in the application of detachable wheels to motor cars is that they be easily and quickly removed, and at the same time that they be held in position by simple, positive means—not complicated by the so-called locking devices or fixings that depend upon springs, pins, or any other extra parts which have to be fitted in position, in order to prevent the member holding or clamping the parts from coming loose. All such devices are not only complicated and trappy by nature, but in the end depend upon human agency and intelligence to see every time that they are fixed properly in place.

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IN the Houk wheel all such locking means have been discarded in favor of a positive single piece clamp nut, completely automatic and self-tightening whenever the car is in motion, and consequently, by virtue of this maximum of simplicity and automatic self-tightening, it is positively fool-proof, no matter under what condition used.

SIMPLICITY

Both the principle of the operation as well as the device itself are so simple and obvious, that, when once understood, the absolute simplicity of the entire construction is the greatest guarantee both of its effectiveness and of its safety.

First, of course, there is a primary or inner hub which contains the bearings, and upon which the hub shell of the wire wheel has to be mounted. Obviously, the most simple means of holding this in place is by a single nut screwed on to the end of the fixed hub member, and thereby clamping the wire wheel in position; but, such a nut is liable to come off. Here is just where the trick is turned by the perfection of the design and the application of this patented device so as to perform this dual function of clamping the two parts together and at the same time being automatic and self-tightening in co-operation with the parts with which it is in contact.

DETAILS OF LOCKING DEVICE

The lock nut is a ring, threaded internally, to engage the threads on the fixed hub, and, on the outside, tapering to clamp and hold the wheel hub shell in correct rigid position. The nut rings are threaded for a loose running fit, and have their conical ends slotted into segments, allowing a slight compression when forced into the conical seat of the hub shell. They, therefore, have a loose running fit on the hubs until finally forced into position. By virtue of the fact that the nuts are threaded loosely there is a slight difference in the diameters, and a consequent greater difference in circumferential length of the threads. Thus, should the nut not be drawn up tight, through either neglect or intention, the wheel supporting the weight of car would bear upon the nut and hence upon the threaded hub in theoretical line contact. As the wheel and hub turns when the car rolls forward, the nut also turns, but only as it is carried forward by the line of contact. The threads, wedging together under the pressure of the load, after the manner of a cone clutch, prevent slippage between the threads and, therefore, force the nut to lag behind the angular travel of the hub parts and consequently to screw itself on to the threads when they are properly positioned on the car—that is to say, on the right hand side of the car the hubs are provided with left hand threads, while on the left hand side of the car the hubs have right hand threads.

On the other hand, when the nuts are once in place, there can be no creeping action, as there is no difference in diameter or peripheral length, and they therefore clamp together in the conical end of the hub. Experience and repeated trial has demonstrated that if a nut is inadvertently left loose, the rolling of the car for only a short distance will suffice to tighten it. On the other hand, when the nut is brought home and this differential creeping action ceases, no amount of backing up would suffice to loosen it.

To the Trade

While announcing a greatly strengthened organization and improved manufacturing facilities, we do not want you to lose sight of the fact for a single instant that wire wheels always provide a greater factor of safety and relieve owners of a good portion of their tire expense. Write us for all particulars regarding wire wheels you may desire.



Houk Manufacturing Co.

BUFFALO NEW YORK

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"American" Axles

Combine in a Perfect Mounting the Finest Type of Worm Drive with a Full-Floating Axle of the Highest Grade



More fortunate than the early users of the worm drive abroad, motor car builders in America can utilize in a complete form the finest known type of this gear, in an axle of equally assured quality.

The Lanchester-Daimler Worm Drive, mounted in a full-floating "American" Axle, fitted with the best of foreign made ball-bearings, constitutes the last word in design, material and workmanship as known to the motor car axle industry today.

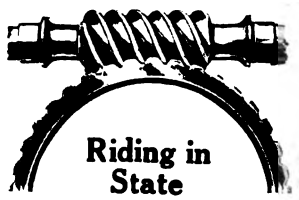
We do not think that there can be any dispute as to the individual superiority of each of the factors named. They are to be found—in their combined form—in "American" Axles only, and they are offered with entire confidence, for use in either gasoline or electric pleasure cars of the highest grade.

It is not necessary to say more for this axle than that it is, in every way, the equal of our "American" Bevel Drive Axle, which, wherever found, indicates a car of exceptional quality.

The adjusting and full-floating features of American Axles are fully covered by our own patents and by shop rights from other patentees.

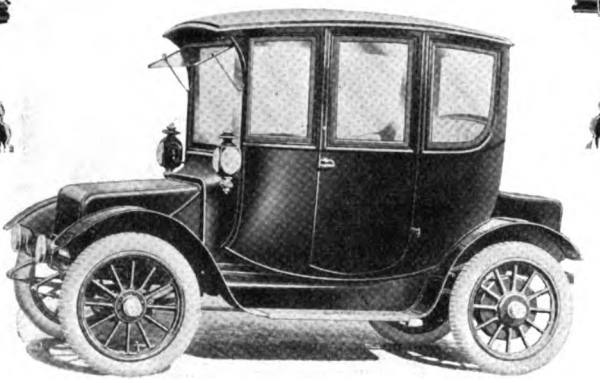
THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Riding in State

No royal coach builder ever lavished more infinite care and pains on a monarch's equipage. A standard developed through sixty years of unceasing endeavor has given Rauch & Lang Electrics an unchallenged prestige that commends them to those of ultra discernment. It is a matter of "not how many, but how good." Naturally our production is limited.





Three Types of Control

For All Driving Necessities

Front Control — Rear Control — Combination Control. The latter type is interlocking — also brakes. Protection against meddling from person seated in rear while car is being operated from front, and vice versa. The Rauch & Lang Control System is the most wonderful protective item in the Electric Vehicle World.

The Climax in Electric Car Construction

The New Rauch & Lang Worm Drive

Rauch & Lang leadership in the making of electrics is again emphasized in the adoption of the Worm Drive—the greatest single advancement in the history of the electric car.

As utmost beauty and refinement have always distinguished Rauch & Lang Electrics, so does the worm drive mark their continued supremacy in respect to method of propulsion. It excels the advantage of the double chain over the single—of the bevel gear shaft over the double chain. It is the engineering world's latest and greatest offering in perfect driving mechanism. It means utter simplicity in driving, greatest power economy, greater all 'round efficiency, better riding and coasting qualities, no adjustments, no misalignment, ***and lower upkeep cost.*** Its silence is soothing. The worm drive is the only practical direct drive in electrics, and the Rauch & Lang Straight Type Worm Drive is superior to all others.

Any Rauch & Lang Agent will gladly demonstrate. Catalog mailed on request.

THE RAUCH & LANG CARRIAGE COMPANY
2183 West Twenty-Fifth Street

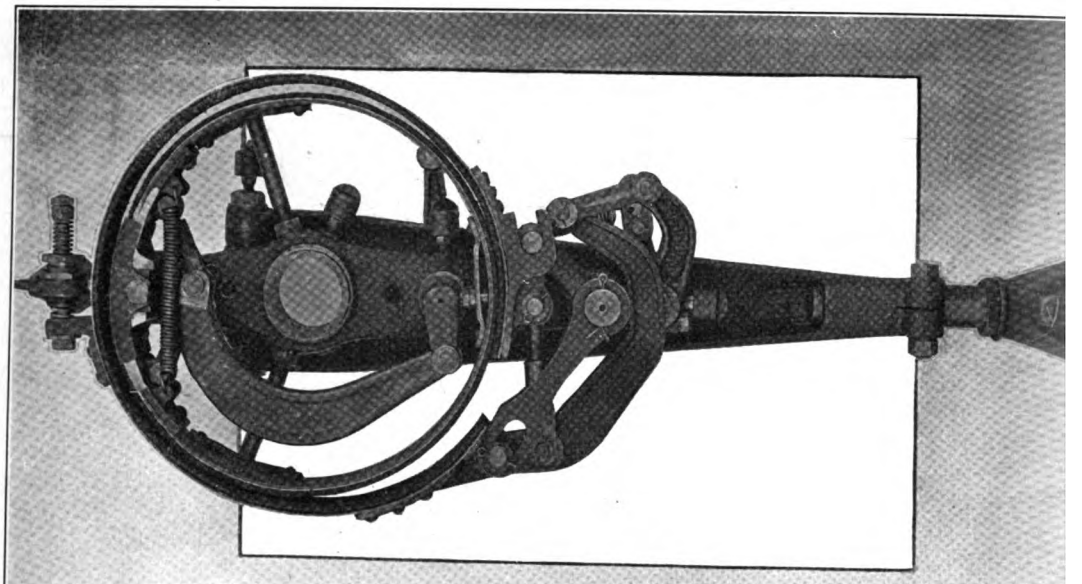
Cleveland Ohio (145)



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SHELDON DOUBLE-BRAKE REAR WHEEL EQUIPMENT

When You Take the Brakes off The Jack-shaft, You Make a Big Step Forward in Motor Truck Progress

The wheels are the safest place for the brakes—they are the proper place.

A jack-shaft brake is never any stronger than the chain. If the chain breaks or jumps the sprocket the truck is practically helpless.

The superiority of Sheldon Double-Brakes-on-the-Rear-Wheels over the jack-shaft design is never questioned by engineers who have looked closely into the matter. Those engineers who have the courage of their investigations **insist** that the wheels are the only logical position for the brakes. Sheldon has solved the problem.

In the first place, there is complete freedom from chain, jack-shaft and axle strain. Then, too, there are a minimum number of parts subjected to strain—therefore, they stand abnormal shocks with greater safety.

You can't always depend on a jack-shaft brake skidding the wheels. Sheldon 3-ton brakes will skid the wheels with a 4½-ton load on a 30% grade EVERY TIME.

Sheldon Double-Brakes-Rear-Wheel-Equipment is the most scientific and effective brake equipment on the market.

If you are interested—write us and we will send you complete information.

SHELDON AXLE COMPANY
WILKES BARRE, PA.

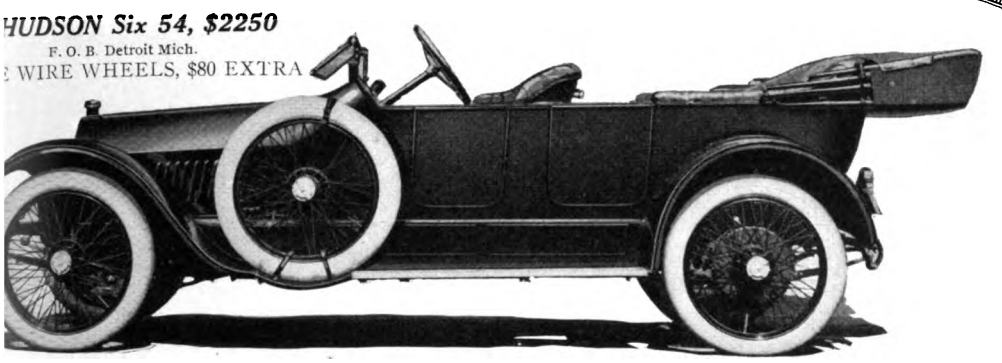
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Experience Six-Cylinder Smoothness in Your Four

---But This Is The Only Way You Can Get It

ED your Four up to 30 miles an hour or more on a smooth road. Then throw t the clutch and close the throttle.

ast down a long smooth hill with the motor running idle.

eeling is that of flying. There is no vibration. In this particular the sensation ing in a Four approaches that felt in a Six.

in a Six, the smoothness is ALWAYS there. e like constant coasting. In the HUDSON Six ill and down, on rough roads or smooth, fast , the feeling is always the same.
our—no matter how powerful or through what ition of gears its power is transmitted—can be ride so smoothly.
take a drive in the HUDSON Six 54.
enjoy driving, take hold of the wheel and feel rself the full meaning of that much-talked-about ness and flexibility of the Six."
other will it have such a meaning for you.

Try coasting with your Four on a run of 100 feet.

Then come, see us, we'll show you how to do it for 300 miles, all day, without fatigue. It must be in a HUDSON Six 54.

New Features in HUDSON Six 54

True streamline body—the handsomest car you ever saw. Highest standard of HUDSON design and construction. The very best we know in beauty and finish. Left side drive. Right hand control. Entrance to driver's seat from either side. Electrically self-cranked and electric lighted.

cept Howard E. Coffin's 1914 Automobile Review---We'll Send It!

tomobile buyer should fail to read Mr. Coffin's bile Review.
lows why six cylinder cars are now so popular. xplains the reasons for their smoothness, and y are so desirable. With diagrams, and in the language he makes you understand why so akers are now manufacturing sixes exclusively. lls about left side drive and right side drive— asoline economy—electric and other gear shifts nline bodies—speedometer drive—new things in . and other features embodied in the 1914

an is more eminently qualified to prepare such w. Mr. Coffin's reputation as an engineer, and his many contributions to the progress of the automobile industry both as a designer of many successful cars, and a contributor to engineering literature make his review authentic.

Of course he refers to the HUDSON Six 54. No discussion of automobile tendencies would be complete that omitted mention of this new car.

Can you afford to consider the purchase of any car costing $1,500 and over without knowing what such an authority as Mr. Coffin has to say upon the subject.

Send your name and address. (273)

HUDSON Motor Car Company
7740 Jefferson Avenue **Detroit, Michigan**

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Springfield Metal Bodies

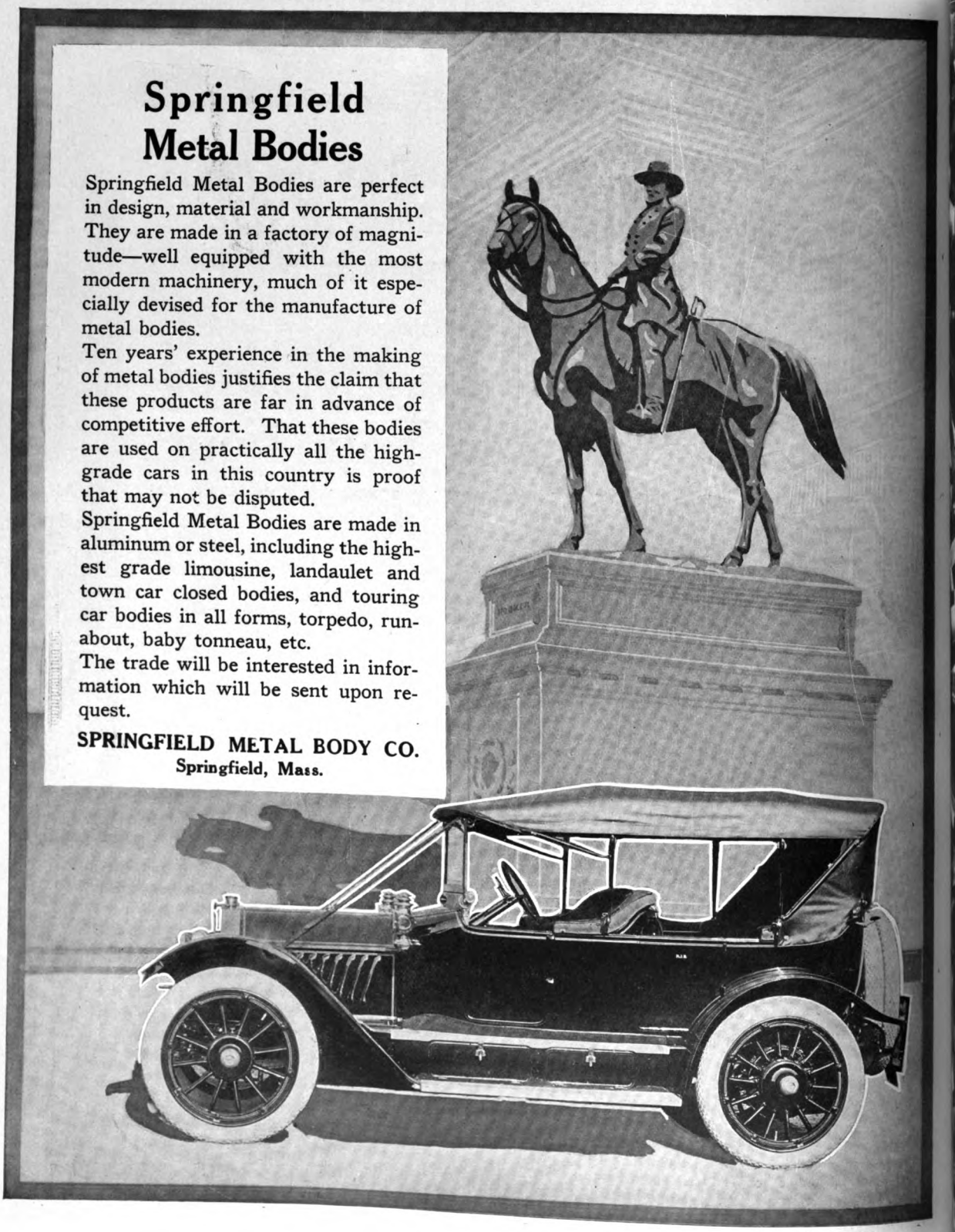
Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

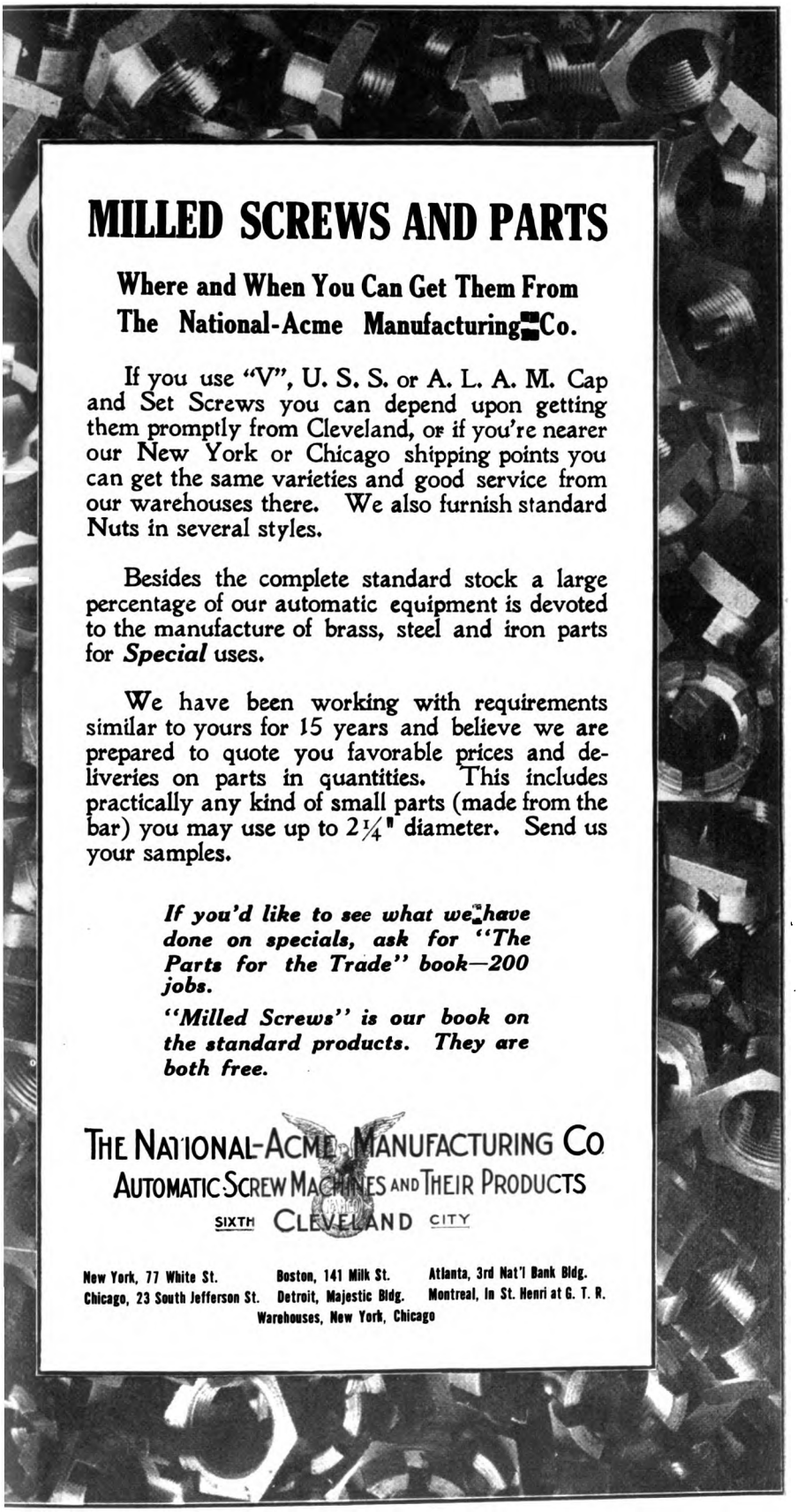
Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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MILLED SCREWS AND PARTS

Where and When You Can Get Them From The National-Acme Manufacturing Co.

If you use "V", U. S. S. or A. L. A. M. Cap and Set Screws you can depend upon getting them promptly from Cleveland, or if you're nearer our New York or Chicago shipping points you can get the same varieties and good service from our warehouses there. We also furnish standard Nuts in several styles.

Besides the complete standard stock a large percentage of our automatic equipment is devoted to the manufacture of brass, steel and iron parts for ***Special*** uses.

We have been working with requirements similar to yours for 15 years and believe we are prepared to quote you favorable prices and deliveries on parts in quantities. This includes practically any kind of small parts (made from the bar) you may use up to 2¼" diameter. Send us your samples.

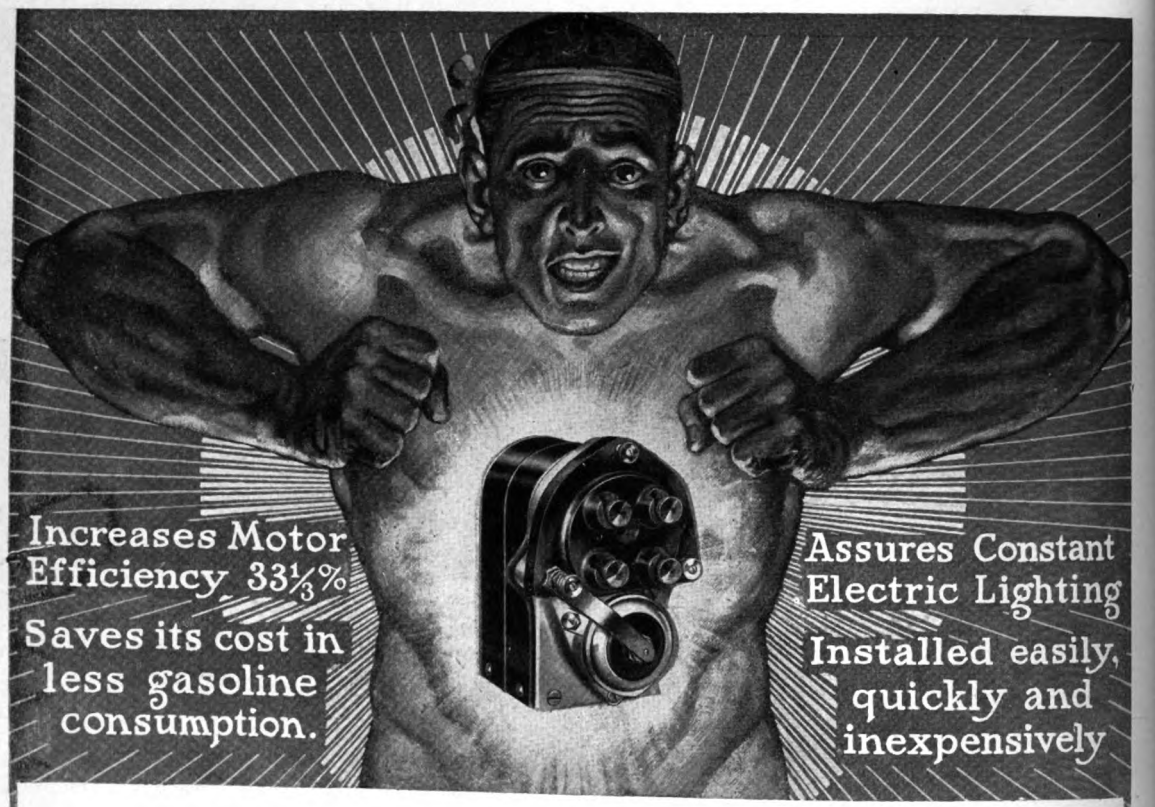
If you'd like to see what we have done on specials, ask for "The Parts for the Trade" book—200 jobs.

"Milled Screws" is our book on the standard products. They are both free.

THE NATIONAL-ACME MANUFACTURING CO
AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS
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SPLITDORF "FORD SPECIAL"

WATERPROOF HIGH-TENSION MAGNETO

The SPLITDORF ELECTRICAL CO. has harkened to the insistent demands of Ford owners and agents and has produced a thoroughly-tested high-tension magneto that promises to revolutionize the running of these remarkable cars.

Waterproof, and enclosed-gear driven, the Splitdorf "Ford Special" High-Tension Magneto is of special construction to meet the demands of Ford cars. With its installation the nuisance and expense of vibrators, coils and batteries pass away and a high-tension system secured that is second to none.

Write or Call Today upon our nearest Branch House for full information

SPLITDORF ELECTRICAL COMPANY

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ore than one_____car in competition much higher price, because it was an Auto-Lite Electric Generator."



"Current to Burn"

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

"G" or is eto e

THE star salesmen of one of the well known automobile concerns made this statement last week in our office. He went on to say—

"The Auto-Lite Electric Generator has given such satisfactory service on_____cars, that I have actually marveled at its ability to keep running day and night without any more attention than I have given the radiator or tires.

I have driven a demonstrator equipped with an Auto-Lite System all over the country, through rain storms, over the roughest kind of roads, and I have yet to find the first fault with it.

The lights are always bright—ready when I want them.

The control is perfect, which is something you can't say about the others.

The Auto-Lite is unquestionably the best electric lighting system on the market today."

These statements were made by a man with long experience in the motor car business.

He travels continuously, is personally acquainted with all of the well-known automobile agents east of the Mississippi River.

Therefore, he is thoroughly posted and knows whereof he speaks.

'IONEER 6 VOLT ELECTRIC SYSTEM"

ET THIS BOOK

Care and Operation of Automobile Electric Systems," a book so nodern electric systems that no automobile owner can afford to

e various parts—how to locate and remedy troubles of all kinds— stems.
t contains is alone worth the price.

stamps if you use this coupon.

C AUTO-LITE COMPANY

CHIGAN STREET, TOLEDO, OHIO
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cal Starting, Ignition and Lighting Outfits for Motor Cars

This Coupon Saves You 40c

The Electric Auto-Lite Co.
116 Michigan Street, Toledo, Ohio

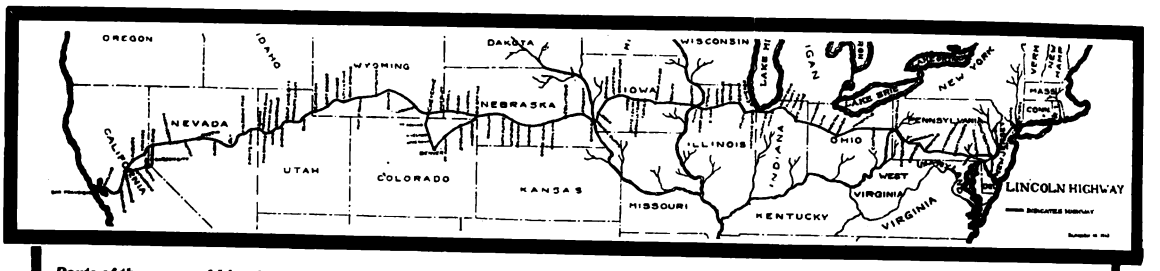
Enclosed find 10c in stamps for which please send me your handbook.

Name _____

Address _____

_____

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Route of the proposed Lincoln Highway. From Indianapolis to Chicago the Indiana-Made cars took the most direct route, thence to the Pacific Coast the cars making the Indiana-Pacific Tour followed as nearly as may be the route of the proposed Lincoln Highway, shown on the map. On this tour eleven of the nineteen cars were equipped with Eisemann Ignition. Performance of Eisemann Ignition detailed below.

EISEMANN

While the Indiana-Pacific Tour was planned originally to boost Indiana-made goods and to awaken interest in the proposed Lincoln Highway, it unconsciously served another purpose, that of demonstrating, beyond the shadow of a doubt, the efficiency and reliability of Eisemann Ignition under the most adverse conditions as well as under the most favorable conditions.

CONFIDENCE . . . Eleven of the nineteen cars making the trip decided to depend upon Eisemann Ignition.

THE TEST. . . . The tour led across prairies, over foothills and mountains, through well watered valleys, over bleak and barren passes and across miles of arid alkali deserts at constantly varying conditions of altitude and temperature. Water, dust, heat and cold, rough or smooth going did not affect the steady performance of the Eisemann Systems.

VINDICATION and a MORAL

Eleven drivers advised us that their particular Eisemann Ignition did not miss a shot for the entire distance, no trouble at any stage of the journey, absolute reliability regardless of conditions. The confidence of the car makers in Eisemann was vindicated.

This is the most severe test of ignition efficiency ever attempted and Eisemann performance in the test should point the way to other manufacturers, dealers and car buyers in any part of the country.

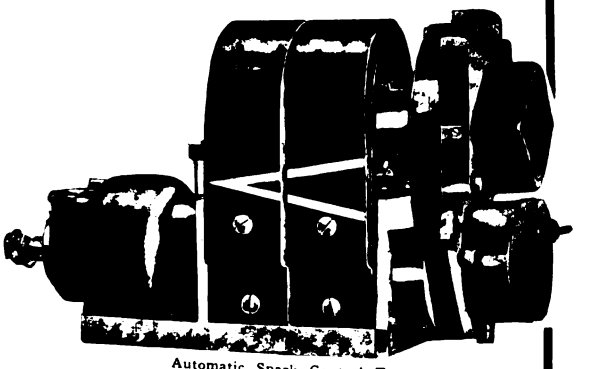
We will gladly send you more particulars at any time.

THE EISEMANN MAGNETO CO.

Sales and General Offices:
225-227 West 57th Street, New York

Indianapolis, Ind.
514 North Capitol Ave.

Detroit, Mich.
802 Woodward Ave.



Automatic Spark Control Type

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RAYFIELD CARBURETORS

Mr. Motorist—

If you **wanted** to economize, i. e., get the **utmost distance out of every gallon of gasoline** and some **one** carburetor accomplished it, you naturally would be interested in **that** particular carburetor.

If you **demanded** the ultimate in flexibility—the ability to make a speed record or to slow down to less than a walk—and some **one** carburetor did it, and did it easily and unfailingly, you would of course seek **that** carburetor.

If you required a carburetor which performs properly in every sort of climate, temperature and widely varying altitudes and some one carburetor was pre-eminent in those crucial accomplishments, you would, if wise, equip your car with **that** carburetor.

If you **knew** that the **Rayfield** carburetor had positively established the **record for economy** for all uses, kinds and sizes of cars;

If you **believed** that the Rayfield had **won more speed contests than all other carburetors combined** and that **every Rayfield** user can crawl along at a snail's pace if he wants to;

If you were **convinced** that the Rayfield could climb from the torrid valley to the zero snow capped mountain trail without a miss, you would discard your present erratic, limited and extravagant carburetor and install **a Rayfield.**

The Rayfield is the **one carburetor that does all these things, perfectly** and **continuously.**

A veritable army of drivers have found it out—that's why the Rayfield is the big carburetor success today.

Try one—we'll take it back within 30 days —if it doesn't make good.

FINDEISEN & KROPF MANUFACTURING COMPANY

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1140 Michigan Avenue, Chicago

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1211 Woodward Avenue, Detroit

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A Nut Lock Washer has three essentials

—proper section

—proper analysis

—proper heat treatment

Are you getting them?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

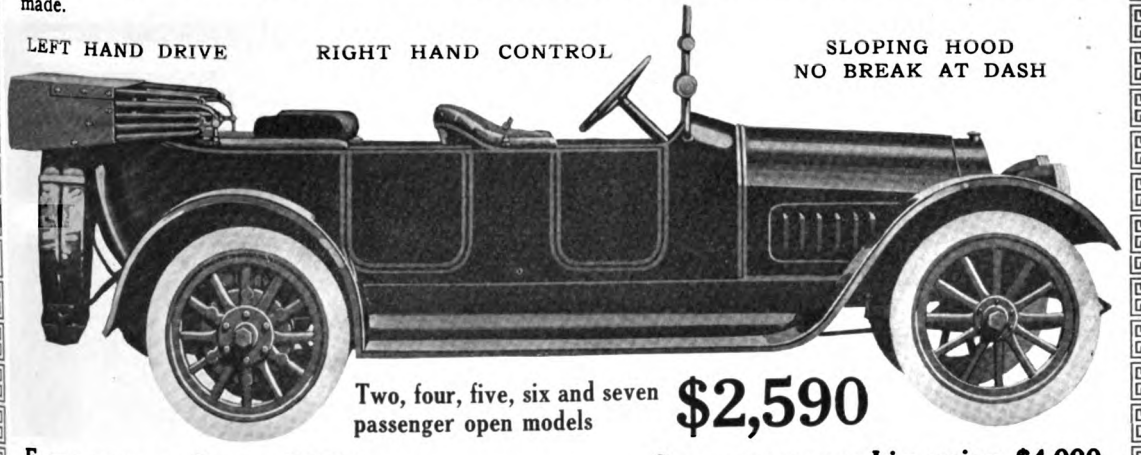
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McFARLAN

ANNOUNCING THE IMPROVED SERIES T

A BIGGER car, but no heavier. A better car, but no higher in price. There is more room in the tonneau on all models. All seats are wider: Cushions are deeper. The Radiator is larger and higher. The lines of the entire car have a much more generous, a much richer appearance than ever before. The stream line effect of the body and hood is beautiful. The air tank for the starting system is larger, so the starter will turn the motor longer and faster. The motor was nearly perfect, but room for a few refinements was found even in it. The rear axle has been refined and is even better than formerly. The air pump for the starting system is all metal and is oiled automatically. Every feature on the car is better than ever before, but even so, few radical changes have been made.

LEFT HAND DRIVE RIGHT HAND CONTROL SLOPING HOOD NO BREAK AT DASH



Two, four, five, six and seven passenger open models **$2,590**

Four passenger Coupe, $3,300 **Seven passenger Limousine, $4,000**

Some Features

MOTOR: Six cylinders, cast enbloc, 4″ x 6″. T head.

SELF STARTER: McFarlan Pneumatic. An absolutely positive motor starter. Fool proof. Entire system weighs but 38 pounds. Spins motor FAST. Pressure supplied by all metal pump.

TIRE INFLATOR: Four cylinder, engine driven pump. All metal.

ELECTRIC LIGHTS: From engine driven dynamo which runs at crankshaft speed.

REAR SPRINGS: ¾ Elliptic, Underslung. 56″ long.
FRONT SPRINGS: 42″ long.

REAR AXLE: Full floating. Very large shafts.

EQUIPMENT: Absolutely complete as shown except extra tires.

FRONT AXLE: Has ball bearing steering knuckles.

GASOLINE SUPPLY: From Cylindrical seamless steel tank on rear of frame. 22 gallons capacity.

TONNEAU ROOM: 40″ from front of back seat to back of front seat in six and seven passenger models. 43″ in Limousine.

TRUFFAULT-HARTFORD SHOCK ABSORBERS.

WHEELBASE: 128″.

TIRES: 36 x 4½″. Firestone rims.

CUSHIONS: 11″ thick. Very light, open bottom, sanitary type. Built to last.

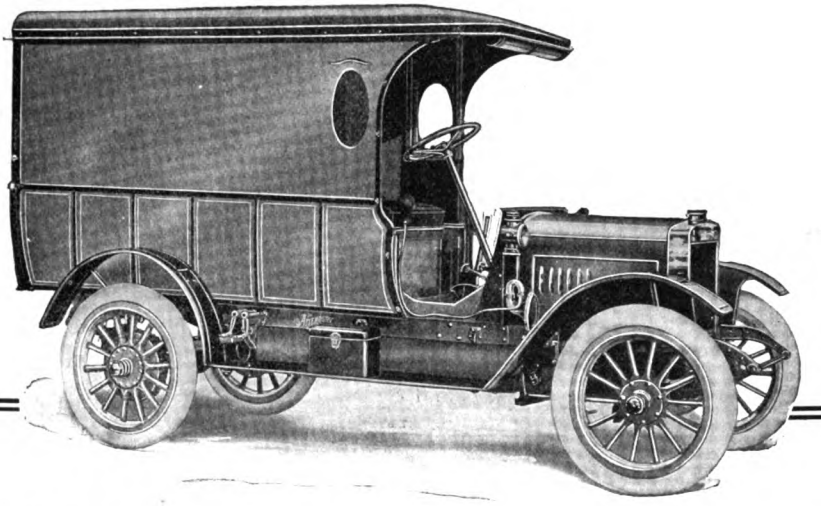
The big new catalogue is ready for you. Address Desk C

McFarlan Motor Car Company, Connersville, Indiana

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THE ATTERBURY LINE

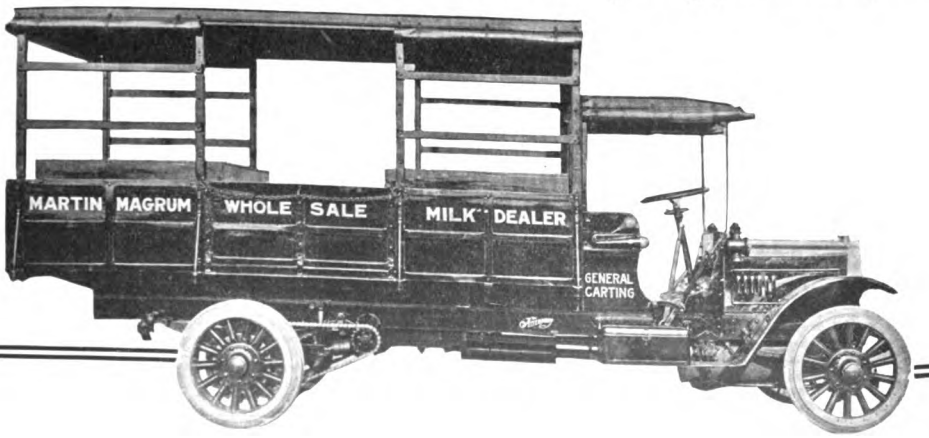


ATTERBURY TRUCKS are built by a concern which has no other line of activity to distract its attention from the production of a line of trucks ranging in capacity from 1,500 pounds to 5 tons. Not only does the Atterbury Company confine its attention to the production of motor trucks but it has done so for ten years. During that time our annual output of trucks has increased from few to a large number, our increased production has enabled us to take on more dealers and to extend the scope of our operations from a purely local business to one assuming national proportions, and, what is better from every standpoint, Atterbury Trucks are giving good satisfaction in whatever line of trade they are used.

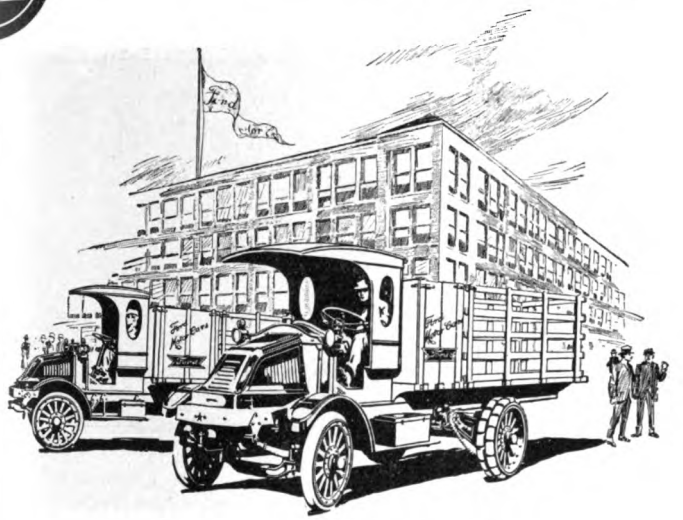
There are but very few truck makers who can point to the unbroken record of success the Atterbury Company has to its credit. There are few makes of trucks that have shown the steady development that Atterbury Trucks show, and when met in competition, there are no trucks more adaptable to hauling problems than Atterbury Trucks.

These are some points for the man to consider who contemplates going into the truck sales business. It is a business that must be done on strict commercial principles, a business where nothing counts quite as much as consistency and merit, and considered from the standpoint of consistency and merit, Atterbury Trucks offer the strongest nucleus that can be found in any American made truck today. Write for the Atterbury dealers' proposition.

The Atterbury Motor Car Company, Buffalo, N. Y.



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"Two Years Ahead"—

This is the opinion of a prominent official of the Ford Motor Company after he had examined carefully the Kelly water-cooled models.

As a result, the Ford Company purchased two three-ton Kellys—making a total of four Kellys now in use at the Detroit plant. These purchases were made after carefully looking over every truck of national repute.

The Dayton Engineering Laboratories Company (Delco) just bought a three-ton Kelly for its Dayton factory.

These companies know the best truck when they see it. Do you?

DEALERS!
There is still some desirable Kelly territory open. Write for our agency proposition.

The Kelly-Springfield Motor Truck Company
1038 Burt Street, Springfield, Ohio

(65)

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12 Years

Standing between you and our guarantee of quality and performance is an experience and study of 12 long years spent in developing and perfecting a *real service giving spark plug.*

The result of that period of pioneering

A plug which cleans itself, which burns the carbon as fast as it forms—a plug which doesn't require frequent replacement and which, under ordinary conditions, should last as long as your engine—the C. A. Mezger

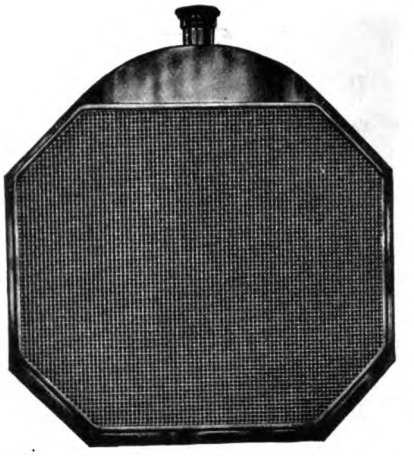
"Soot Proof"

Soot Proof Spark Plugs are controlled by basic patents which make successful imitation impossible. Built with a double chamber. Therefore they offer three times the resistance of any other spark plug made.

Millions in use today on the best built cars in America, some of them after 8 years' continuous service.

On a basis of repeat orders alone you should stock Soot Proof Plugs—to say nothing of the satisfied customers you will make by pushing Soot Proof Plugs as your leader.

C. A. MEZGER, Inc
15 Canal Place
New York



Our departments of engineering and design co-operate with the men who build the car—combining their weight of experience in radiator making with the particular requirements of the designer of the automobile.

We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky, inefficient radiator and a "superheated" customer, then be sure this car was not equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Co.
NEW HAVEN, CONNECTICUT

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A convenient lamp chest

This chest is what the car owner has been looking for as a suitable, convenient and safe method of carrying extra lamps.

The leatherette covered case is of a convenient size and contains headlights, side lights and rear or speedometer lights.

Each lamp is fitted snugly in an individual holder thereby preventing breakage.

ally lighted automobile should contain one of these convenient chests

example of Edison Mazda Automobile service.

given on label of the chest, the correct lamp can always be obtained
ap Service Station.

established all over the country where the right lamp to suit the lighting
ily be purchased.

al Electric Company

Dept. Harrison, N. J.

Lamp Agencies Everywhere 4214

IMPORTANT MESSAGE:



The Part that Sells the Car— that Sells the Car— that Sells the Car—

uda motor does its own talking—and yours.

AVE BUDA MOTOR FOR THEIR "SILENT SALES MANAGER."

BUDA MOTOR

Cast-in-block construction."

Write Us.

he Part That Sells the Car"

IE BUDA COMPANY

Factory, Harvey, Ill., (Chicago Suburbs)
all communications to our FACTORY REPRESENTATIVES

BRANDENBURG & COMPANY
57th & Broadway, New York, N. Y.

Ford B.dg., Detroit

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is based on the fact that we have been handling the engraving of several prominent trade and general publications for years to the utmost satisfaction of both publishers and advertisers

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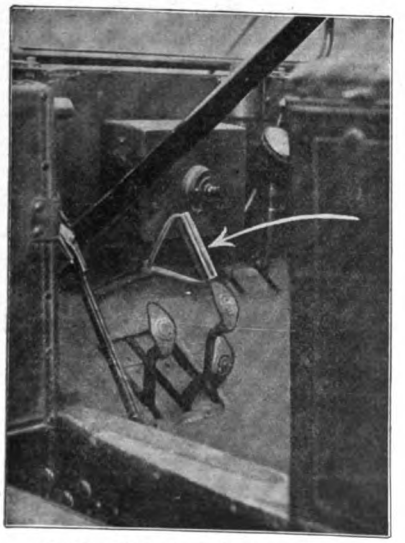
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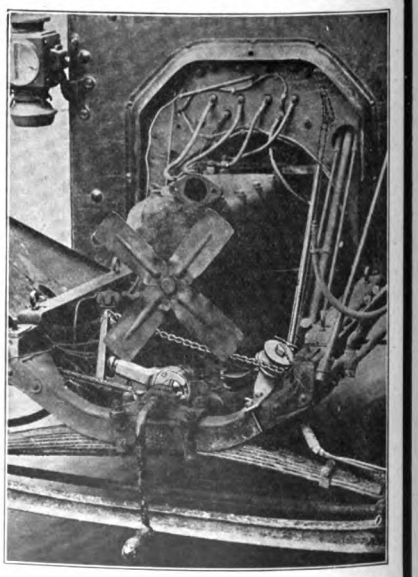
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



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Let us solve your clutch problems



It pays to know that the CLUTCH — the most frequent point of contact between driver and car — is absolutely right. No guesses. No "ifs."

We are CLUTCH
a chance to figure on your CLUTCH
ite you to get in touch with us now—
ot be ready to place your order—
me to "make assurance doubly sure" by
egard to your requirements. Concerns
better quality of workmanship will find
/ gives a CLUTCH and a SERVICE
Write.

nigslow Mfg. Company
CLEVELAND

Clutches
Clutch Rocker Shafts
Control Levers
Universal Joints

KONIGSLOW CLEVELAND

Detroit Office: J. H. GOULD
1202 Majestic Building

tomers Who Desire to Use "Whitney" Chains of the Silent Type

Copy of Circular Issued May 14, 1913

o market chains of the Silent type, we have made special effort to impress upon our r providing proper conditions for both chains and sprockets. We have pointed out that rned to the right shape and that the teeth must be correctly cut. Sprockets should not uld be larger if possible, and should be kept accurately in line. We have also urged on nce of selecting chains wide enough and large enough for their purpose and we have tomers make a thorough and exhaustive test before ordering in quantities to make sure en properly provided for. As a means to this end we have requested that the sprocket customer or by The Whitney Mfg. Co. and not by some third party. In spite of these s where our chains may fail to give complete satisfaction because some customers are roper sprockets, or have adopted chains too small in pitch or too narrow for their con-

state that customers who do not follow our suggestion, but on the contrary secure lease and possibly where they can secure the lowest price, are liable to obtain incorrect noment we may feel compelled in such cases to discontinue shipments of chain, or insist us for inspection at the customers' expense, before furnishing chain.
orce customers to use our chains on correct sprockets and to use chains of a sufficient f we get certain customers into temporary difficulty. The ultimate result, however, we o all.

lain the conditions for which our Silent chain is desired, we will be pleased to recom- rial, but, as stated above, we advise that chains shall not be purchased in quantity until e and the results found satisfactory.

ie Bicycle industry and when Roller chains were ffrst used for the main drive on auto- used our chains on incorrect sprockets and we shielded them in every way possible, blame for unsatisfactory results. With the Silent chain we will positively not follow this pt chains without making proper tests, and use them on poor sprockets, or under un- must take the consequences, for we certainly shall accept no responsibility in the matter, uld, of course, have our sympathy and we would do our best to render assistance.

aintain our position, as outlined above, as we do not intend that our chains shall be un- n help it.

Y MANUFACTURING COMPANY, Hartford, Conn.

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Good Cable Essential

In the early days, when only an ignition system existed, and particularly when automobiles were not rated for their reliability a poor quality of cable might have answered.

If a cable gave out in those days only a few minutes' time was required to take out the old cable and replace it with new cable.

Since the advent of electric lighting and starting devices and electric gear shifts high quality cable is essential to get 100 per cent efficiency.

It is practically out of the question to expect a car owner to be familiar with every part of his elec trical system.

Packard CABLE

The car maker as well as the starting and lighting manufacturers owe it to themselves and their customers to use the best cable they can buy to make the wiring permanent and effective.

Packard high quality cable alone meets all of the exacting requirements. Every foot of Packard cable is submitted to rigid tests which eliminate all danger of ever getting a piece of defective cable. It costs a little more because it lasts longer and always makes good.

This Hanger Free

A 16x20 six color reproduction of the Packard Girl painting by Liebscher will be sent you with your initial order. Samples of cable and prices on request.



The Packard Electric Co.

Dept. D WARREN, OHIO (22)

Automatic Repeat Orders

The **SANFORD** is so sure to do all that is claimed for it that our representatives find the repeat orders coming automatically.

Nine long years have been spent in making the

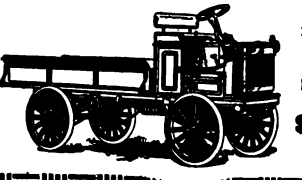
Sanford a practical **TRUCK**

Merchants who want reliability, real service, and tire economy from their trucks should investigate the **SANFORD.**

Write for specifications

THE SANFORD MOTOR TRUCK COMPANY
W. Fayette Street, Syracuse, N. Y., U. S. A.
EXPORT DEPARTMENT
Room 333, 17 Battery Place New York City, U. S. A.
F. T. SANFORD AUTOMOBILE CO., 481-483 Park Avenue
Distributors for New York City

1-Ton Chassis and Driver's Seat **$1660**



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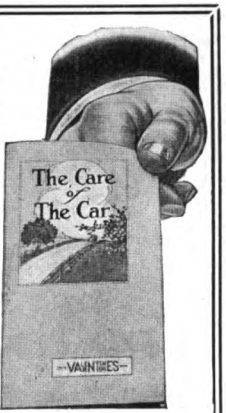
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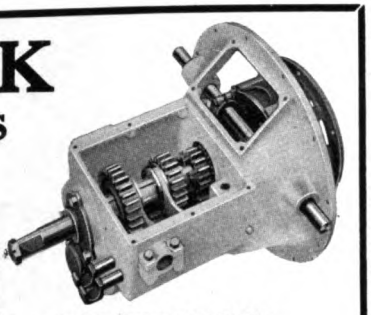
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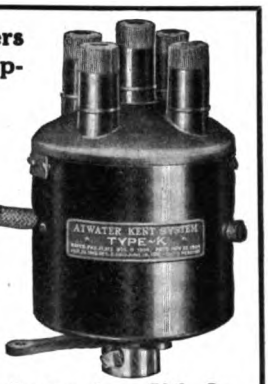
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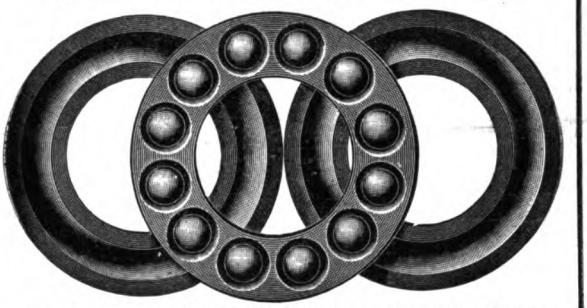
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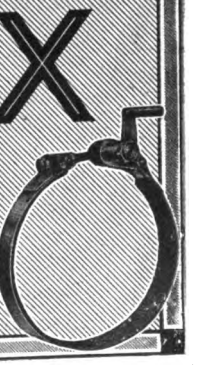
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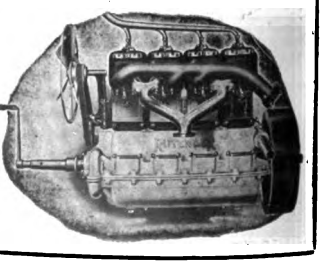
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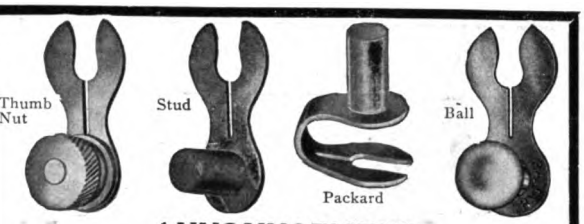
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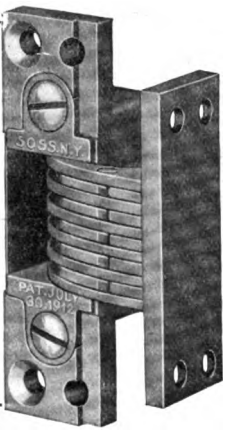
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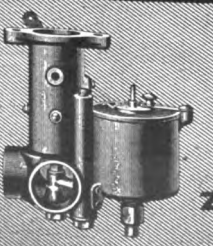
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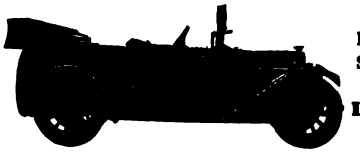
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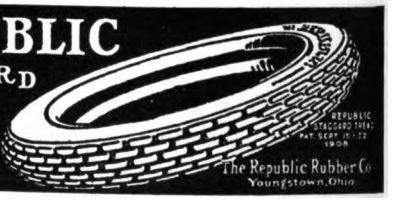
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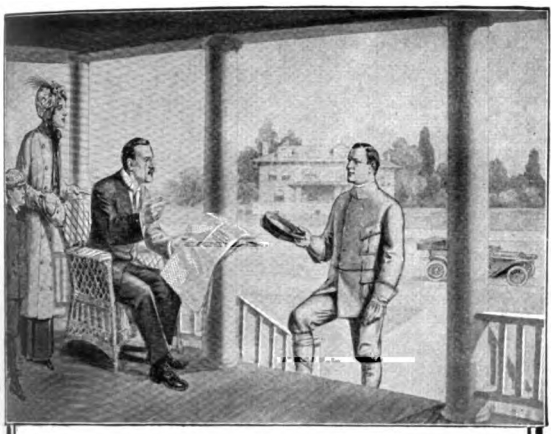
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The coupon will bring you a complimentary copy of our famous book, "Care and Repair of Tires." and dealers' proposition. Send for it today.

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If other dealers can sell them, we can. We are willing to be shown.

Name .....

Address .....

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

ELECTRICAL, electromechanical and storage battery expert desires connection with automobile manufacturing company. Fully capable of taking entire charge of everything electrical in the equipment of the cars and plant. Technical education and practical experience in automobile requirements up to date. Present environment too limited in opportunity. Box 265, care Motor World.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large storage, renting and repairing business. Fully equipped repair shops. This is a big bargain for a hustler, it is now making big money. Terms easy. Address, HUSTLER, General Delivery, Bayonne, N. J.

PEERLESS MOHAIR TOP DRESSING.
Makes old, faded, water and grease stained tops look like new. Waterproofs leaking mohair, duck and canvas. Leaves the cloth soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE OR RENT — Completely equipped automobile or engine manufacturing plant, located in large middle west city, attractive labor, raw material supply and railroad facilities. Plant can be operated on short notice. Address Box 264, care Motor World.

HAVING discontinued agency, we have one type 77 "Lozier" that we will sell at cost. GRANT BROS. AUTO CO., 1000 Woodward Ave., Detroit, Mich.

A YOUNG MAN, age 24, desires to change position about Jan. 1st. Have had over five years automobile business experience. With present employer 4¼ years, 2½ years office work, balance of time have had charge of business, selling, etc. Best references given. Address EXPERIENCE, care Motor World.

THE only successful aluminum solder will solder aluminum, silver, nickel, brass, pewter; guaranteed. Box with instruction, 50c., stamps or money order. No free samples. ALUMINUM CO., 2714 Olive St., St. Louis, Mo.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FORD CAR WIRE WHEELS.
Demountable wire wheels, interchangeable all around, built especially for Ford cars. Five wheels to a set, enabling you to carry spare wheel with inflated tire and make quick change.
THE F. & H. WIRE WHEEL CO., Columbus, Ohio.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For brass, nickel or iron. Bakes to a high gloss finish that will not crack, chip or peel. Solid covering one coat, without a primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

KEROSENE FOR AUTOMOBILES.
Our new Model B uses successfully half and half mixture lowest grades kerosene and gasoline. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special Agents' prices. Dept. 9. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

PEERLESS CYLINDER ENAMEL.
A black gloss finish not affected by grease, heat or gasoline. Keeps the engine clean and the metal parts from rusting. THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

FOR SALE—Complete charging rectifier for electric automobiles, together with automatic shutoff. Apply OSCAR GREENWALD, care Gimbels, Milwaukee, Wis.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

WE make Ford racing type bodies in several models, for immediate delivery. AUTO SHEET METAL WORKS, 1530 S. Michigan Ave., Chicago, Ill.

PEERLESS LEATHER TOP DRESSING.
A renewer and preserver of all old leather, rubber and pantasote tops and curtains. A fast black color that will not fade or wash off. THE COLUMBUS VARNISH CO., Columbus, Ohio.

If you are seeking information about

Motor Cars or Motor Trucks

YOU'LL FIND IT IN

MOTOR WORLD

Published Every Thursday at 1600 Broadway, New York

TWO DOLLARS PER YEAR *Specimen Copies Gratis* TEN CENTS PER COPY

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S.U. CARBURETOR
really fool-proof—absolutely automatic—only one moving part.
THE SIMMS MAGNETO CO. 1790 Broadway, New York City Factory, Bloomfield, N. J.

POLSON Quality Windshields
Auxiliary Seats, Bumpers and Gas Starters
POLSON MANUFACTURING CO., Buffalo, N. Y.

Woodworth Treads
will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.
LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

AMERICAN KUSHION KORE
A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.
AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

FEPS CARBURETOR
"A Giant in Power —A Miser in Fuel"
25% to 50% more mileage
Write for illustrated, descriptive booklet
SCHOEN-JACKSON COMPANY, - Media, Pa.

Schafer Ball Bearings
Famous for Their Durability
BARTHEL & DALY, 42 Broadway, New York

The Reasons for Jencick Quality and Jencick Prices are worth knowing.
JENCICK MOTORS For Motor Trucks
from base to spark plug, have features that are "Different and Better."
JENCICK MOTOR CORPORATION, Port Chester, New York

GOODYEAR
AKRON, OHIO.
This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

PERFECTION SPRING COMPANY
Specialists in Spring Suspension High Grade Only
CLEVELAND, OHIO


UNITED STATES TIRES
ARE GOOD TIRES

Guide Motor Lamps
(ELECTRIC)
Write for "Guide Books" Nos. 1 and 6
GUIDE MOTOR LAMP MFG. COMPANY
CLEVELAND, OHIO (1)

HESS AXLES
Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.
HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO

AUTO-TOP FABRICS
OF EVERY DESCRIPTION
Samples and Prices on Request
L. J. MUTTY COMPANY, Boston


A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

MOTZ Cushion Tires
For Pleasure Cars and Light Delivery Cars
Send for Booklet 58
The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
Service Stations in All Principal Cities

METZ "22" ROADSTER $475
The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor. Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."
METZ COMPANY, Waltham, Mass., U. S. A.


HEALS TIRE CUTS
NARCO
TIRE CUT FILLER
The Motorist's Self Vulcanizer
NATIONAL RUBBER COMPANY, 4413 Papin St., St. Louis, Mo.

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Hess-Bright Ball Bearings

HESS-BRIGHT SERVICE

Complying with the urgent requests of many of our customers we have made additional provision for repairing and re-making our own bearings. Our facilities are unequalled.

THE HESS-BRIGHT MANUFACTURING CO.

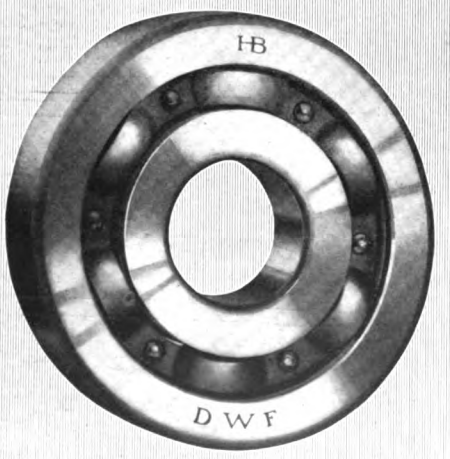
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PHILADELPHIA
666 N. Broad St.

NEW YORK
1974 Broadway

CHICAGO
1800 Michigan Ave.



HB – DWF

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When you buy a car
ask about the Warning Signal

IF the salesman says "Klaxon" you will know something about the car.

You will know that the car maker has not spared expense to give you the BEST he can buy from radiator to tail-light.

You will know that he is paying from two to eight times as much for the Klaxon as he would have to pay for a cheap unknown "electric horn."

If he equips with the highest priced warning signal, he will not skimp on motor, transmission, axles

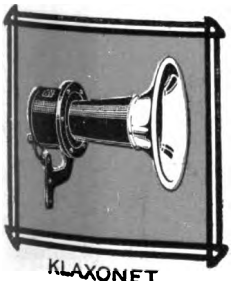
IF the salesman says "electric horn" or "just like the Klaxon," ask him what kind of horn. In nine cases out of ten, HE WON'T KNOW.

You will know something about THAT car. The maker is supplying an inferior, unknown accessory, where, from a standpoint of safety alone, he should supply the best—just as he should supply the best brakes.

That car is built around a price. Safety and quality are secondary.

These cars are Klaxonized

A. E. C.
Alco
Armleder
Autocar
H. H. Babcock
Benz
Borland Electric
Broc Electric
Buffalo Electric Roadster
Century Electric
Charon (European)
Chicago Electric
Columbia
Croxton
Davis
F. I. A. T.
Havers "Six"
King
Kissel
Knickerbocker
Knox
Lancia (European)
Locomobile
Lozier
Marmon
Matheson
Maxwell "Six"
Mercedes
Metallurgique
Mors (European)
Multiplex
National
Nyberg
Oakland
Ohio "Six"
Oldsmobile
Packard
Peerless
Peugeot
Pierce-Arrow
Pope-Hartford "Six"
Pratt
Rambler
S. & M. "Six"
Schneider (European)
S. G. V.
Simplex
Stafford
Staver
Stearns
Sternberg
Stevens-Duryea
Stoddard-Dayton
Touraine
Walker Electric
Ward
White
Winton



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



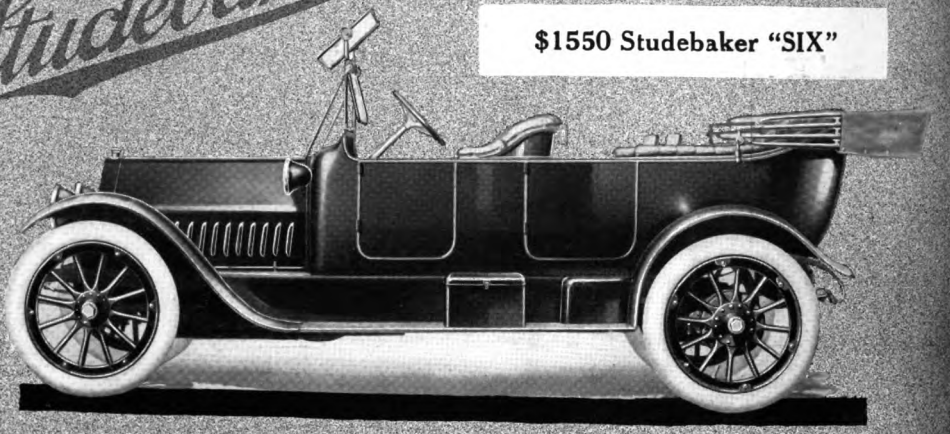
KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory. Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy.

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Studebaker

$1550 Studebaker "SIX"



THERE are comparatively few business houses in the United States that can point to an uninterrupted business career of more than half a century, —and, in addition, possess unlimited financial resources, and a world-wide reputation for integrity and the "square deal."

Stability, financial responsibility, integrity—are but a few of the reasons that make automobile dealers anxious to sell Studebaker cars. They have confidence in Studebaker and in Studebaker Service.

The confidence is felt by car purchasers as well as by the men who sell cars. That is why Studebaker cars are easy to sell. And—having sold a car—Dealer and Purchaser know that every aid and co-operation will be given by Studebaker to keep both Dealer and Purchaser satisfied.

THREE CARS

$885 Studebaker "25"
$1290 Studebaker "35"
$1550 Studebaker "SIX"

Completely equipped f. o. b. Detroit

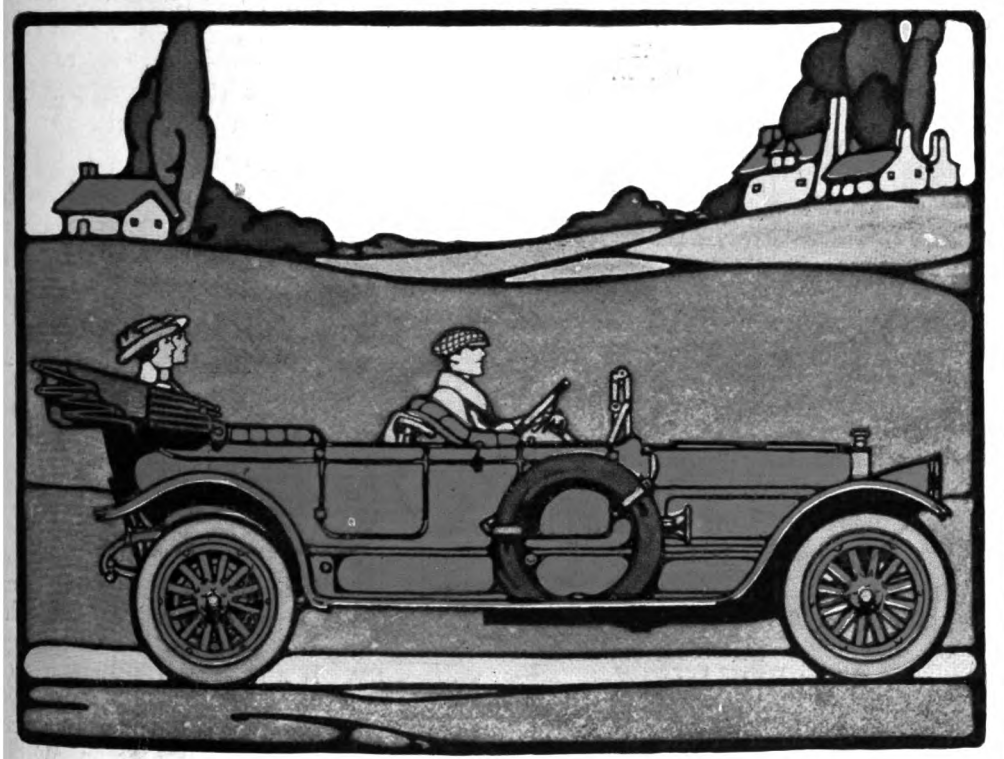
STUDEBAKER . . . . . DETROIT, MICHIGAN

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MOTOR WORLD

ade Paper Giving the World's Motor News

II New York, October 9, 1913 Ten cents a copy
Two dollars a year



NO matter what you pay for an Automobile, unless you buy with it a service that lasts as long as the car lasts, you have not made a good investment. In each city where

THE PIERCE-ARROW CARS

are sold there is a complete establishment for rendering those cars every attention they may need.

THE PIERCE-ARROW MOTOR CAR CO., BUFFALO, NEW YORK

ed Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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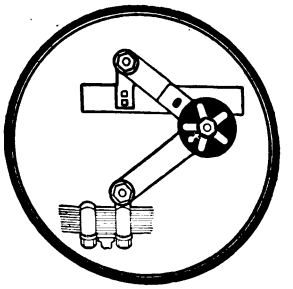
Have You Tried the New Automatic Truffault-Hartford Shock Absorber?

It is the greatest improvement in shock absorbers in four years and is offered by Mr. E. V. Hartford, who designed the original Truffault-Hartford and who is now responsible for the perfection of this New Automatic Truffault-Hartford—absolutely the highest type of shock absorber in the world.

Equipped with this device, your car recognizes no difference between the roughest stretch of cross-country road and the smoothest boulevard. All roads are smooth roads in the truest sense. Cobblestones and wretched thoroughfares are ridden over as easily and luxuriously as the Pullman coach rides on a rock-ballasted railway. Your motoring comfort is *complete*.

The New Automatic is a broader application of the time-proven principle of frictional absorption upon which the famous Truffault-Hartford has always been built. It has three frictional tensions instead of one.

The first of these, while very slight, serves to absorb the noticeable vibration of the car on smooth roads. It is an effective safeguard against crystallization of steering knuckles, etc.



When the road assumes moderate roughness the tension is automatically doubled and this second degree holds the spring in check without interfering with its normal up and down movement.

A third tensional degree, offering still greater resistance, is provided to nullify the damaging jolts and jars on crossing car tracks, culverts, road ruts, etc. The spring is thus prevented from excessive action under the stress of even the roughest going.

All tensions respond immediately to the varying road conditions, and the tensions are easily adjusted to the proper intensity on every type of spring—the stiffest as well as the most flexible. There is no other shock absorber that can compare with the

New Automatic
Truffault-Hartford
SHOCK ABSORBER

for efficient, lasting service on all cars of heavy build. See the New Automatic on exhibition in any one of our Branches, or ask your dealer for a road demonstration of this device. $60 per set of four. Other Truffault-Hartfords $50, $40, $25, $15. Full descriptive pamphlet will be sent on your request.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay Street, Jersey City, N. J.**

Manufacturers of Hartford Electric Starting and Lighting System

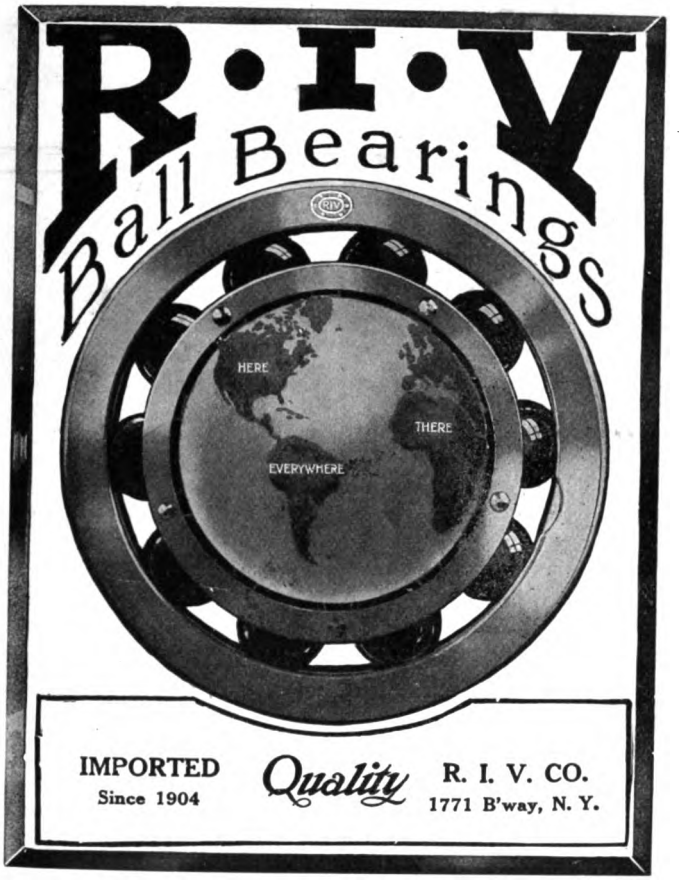
BRANCHES

New York—1700 Broadway
New York—212-214 West 88th St.
Boston—319-325 Columbus Ave.
Chicago—1458 Michigan Ave.
Philadelphia—1437 Vine St.
Newark—311 Halsey St.
Jersey City—141-143 Morgan St.
Kansas City—1524 Grand Ave.
Detroit—803 Woodward Ave.
Indianapolis—448-50 No. Capitol Blvd.

DISTRIBUTORS

Chanslor & Lyon — San Francisco, Seattle, Spokane
Los Angeles, Portland, Fresno, Oakland
Reinhart Bros. Co., Inc. — Minneapolis, Minn.
Coughlin & Davis, Cincinnati, O.
Pennsylvania Rubber Co., Cleveland, O.
Jas. G. Barclay, 720 Main St., Buffalo, N. Y.
John Millen & Son — Montreal, Toronto, Winnipeg, Vancouver

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R. I. V. equipped cars provide the dealer with a strong selling argument, the value of which he is well aware. R. I. V. Imported Ball Bearings are often the factor that determines a sale.

Enterprising dealers are prone to claim these QUALITY bearings are used in their cars. They know the efficiency and durability of R. I. V. are undisputed and that discriminating motorists consider them a necessity to the guarantee of a silent and continuously satisfactorily running car.

WESTERN DISTRIBUTERS—San Francisco, Cal., Weinstock, Nichols Co., Golden Gate Ave.; Portland, Ore., West Coast Supply Co., 31 7th St.; Detroit, Mich., R. I. V. Co., 870 Woodward Ave.

EASTERN DISTRIBUTERS—Boston, Mass., F. Shirley Boyd, 903 Boylston St.; Baltimore, Md., Reuss Bros. Co., Mt. Royal Ave. and Cathedral St.; Philadelphia, Pa., Philip F. Malickson & Co., 1418 Vine St.; Pittsburgh, Pa., Dyke Motor Supply Co., 322 Liberty Ave.

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IN the progress of man to the advanced methods of today, all has depended on improvement in quality and efficiency of manual tools. Best representative of modern tool standards are unquestionably

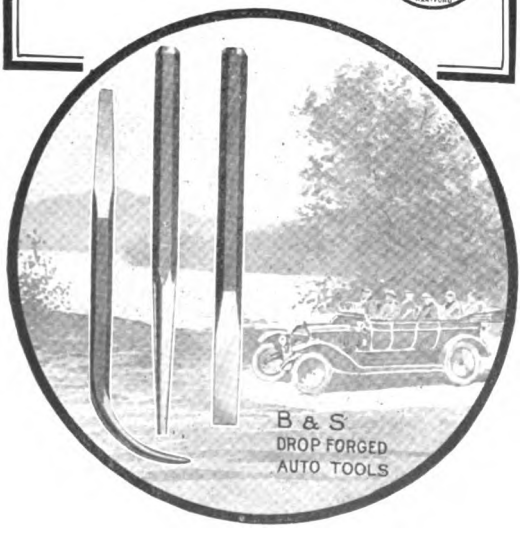
Billings & Spencer Tools

"The tools that are guaranteed"

The reason is in the fact that their advanced features of construction provide the utmost in efficiency, convenience, ease of action and durability.

Write for catalog and prices

Billings & Spencer Company
Hartford, Conn.



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Kelly - Springfield

Automobile Tires

From the composition of most tires you might think real rubber was hard to get. We don't have any difficulty securing it. But then, we really want to find it—so we do.

Kelly - Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Boss Rubber Co., Denver, Colo.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Central Rubber & Supply Co., Indianapolis, Ind.
H. R. Olmstead & Son, Syracuse, N. Y.
Bering Tire & Rubber Co., Houston, Texas.
Todd Rubber Co., New Haven, Conn.
Atkinson Tire & Supply Co., Jacksonville, Fla.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

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Overland

$950

Completely Equipped

With Gray & Davis electric starter and generator—$1075

Prices f. o. b. Toledo

Full electric lights
Storage battery
35 horsepower motor
114-inch wheelbase
Timken bearings
33 x 4 Q. D. tires
Clear vision windshield
Brewster green body
with light green striping,
nickel and aluminum
trimmings
Mohair top, curtains
and boot
Stewart speedometer
Electric horn

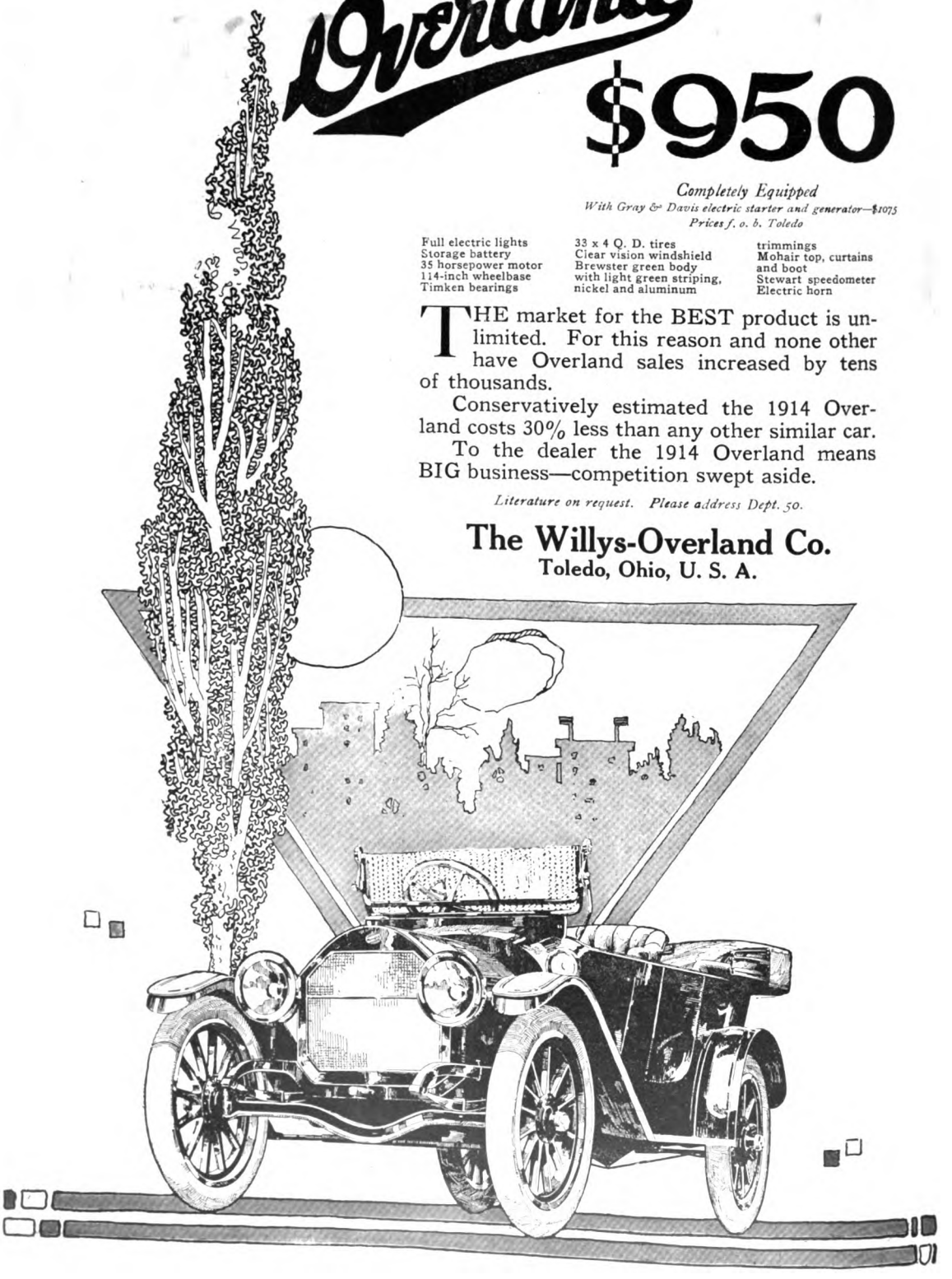
THE market for the BEST product is unlimited. For this reason and none other have Overland sales increased by tens of thousands.

Conservatively estimated the 1914 Overland costs 30% less than any other similar car.

To the dealer the 1914 Overland means BIG business—competition swept aside.

Literature on request. Please address Dept. 50.

The Willys-Overland Co.
Toledo, Ohio, U. S. A.



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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, October 9, 1913 No. 3

KLAXON TAKES NEW TACK IN LAWSUIT AGAINST SPARTON

Lovell Claims $24,000 "Reward" for "Discovering" Sparton's Alleged Misuse of Word "Patented"—Three Other Suits Filed.

Without awaiting the outcome of the several suits which have been instituted against supply houses handling Sparton horns, and automobile dealers selling cars equipped with that device, the Lovell-McConnell Mfg. Co., of Newark, N. J., has carried the war directly to the Sparton makers, the Sparks-Withington Co., of Jackson, Mich.

In doing so, the Lovell-McConnell people have not only filed suit for alleged infringement of their several patents, but have struck out in a wholly new and unexpected direction by seeking the reward offered by Federal statute No. 4901, covering the use of the word "patented" on articles on which a patent has not been granted.

This particular action is brought by F. Hallett Lovell, Jr., president of the Lovell-McConnell company, who seeks to recover $24,100 for his services in locating 142 violations of the offense by the Sparks-Withington Co., the violations, of course, consisting of imprinting the word "patented" on Sparton horns on which it is asserted no patent has been granted.

The Federal statute in question imposes a penalty of not less than $100 for each violation of the sort, one-half of the penalty to be paid the person who shall sue for it.

In addition to this action, and two suits for infringement of patents, the Lovell-McConnell company has brought a fourth action charging the Sparks-Withington Co. with unfair competition, in that it is alleged to have imitated the plaintiff's Klaxet and Klaxonet devices.

In most of the infringement suits which the Lovell-McConnell company has instituted, but three patents have been named. In their two actions for infringement against the Sparks-Withington people, however, they name eight patents: Nos. 838,643, 923,048, 923,049, 923,122, 957,161, 1,043,703, 1,043,704 and 39,801.

The four suits were filed in the United States District Court for the Eastern District of Michigan.

International Motor Requires More Money.

Notwithstanding that in December last the International Motor Co., of New York, bridged threatened financial difficulty by negotiating a loan of $1,500,000 with an "inside syndicate" composed of stockholders, additional working capital has been found necessary to continue the production of Saurer and Mack trucks. A special meeting of the stockholders was held on Tuesday last to consider a plan whereby the required funds may be raised but, although a quorum was present, action was deferred for one week because, it is stated, certain of the stockholders desired time for further consideration. Information concerning the nature of the plan proposed is withheld.

British Car Adopts American Starter.

Indifference or pooh-poohing of the foreign press has not served to blind all of the British car manufacturers to the merits of electric lighting and starting systems. It is known that at least four of them are almost ready to announce their adoption of another American device, and it is now common property that the Sheffield Motor Works, Ltd., has contracted to use the U-S-L system. It will be applied to the Sheffield-Simplex car, which is one of the highest priced automobiles in the world.

Wilcox Sells His Standard Truck Interests.

Howard Wilcox, president of the Standard Motor Truck Co., of Detroit, which he organized, has disposed of his holdings in the company to M. S. Fisher, its treasurer, who at once assumed the presidency and who will retain the treasurership, also. Wilcox, it is stated, will at once engage in the manufacture of a five-ton truck, the design of which he has well in hand.

MAY "SICK" A GRAND JURY ONTO BANKRUPT MICHIGAN

Attorney General Asks for Special Prosecutor and an Investigation—Court Turns Down Gerber and Orders Certain Assets Sold.

Following a hearing in the United States District Court in Grand Rapids on Friday last, 3rd inst., Judge Sessions ordered the Detroit Trust Co., as trustee of the Michigan Buggy Co., of Kalamazoo, to enter into a contract with Samuel L. Winternitz & Co., of Chicago, for the sale of certain of the assets. The Chicago firm guaranteed to dispose of the tangible personal property, exclusive of real estate and manufactured products, for $225,000 in return for a commission of 12½ per cent. E. F. Gerber, the Pittsburgh dealer who handled the Michigan cars, renewed his offer for the physical assets of the company, but his bid of $265,000 was again rejected.

On the same day this action was taken, the Attorney General of Michigan took the first definite step toward probing the criminal practices which are alleged to have contributed to the failure. His application for a special grand jury to investigate was granted. This action, which is rarely resorted to in Michigan, means that a special prosecutor will be appointed to conduct the investigation, which is expected to lay bare not only the system of high finance which kept the company afloat but the "velvet payroll" out of which four officers paid themselves more than $100,000 each year through a mythical firm, and gifts of cars to sheriffs and others which were charged against customers' accounts.

It is intimated that the official investigation will disclose even more startling irregularities, to say nothing of extravagances which took many forms. One Kalamazoo bank president already has resigned and V. L. Palmer, secretary of the Buggy company, has gone into bankruptcy

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TANK'S "EXCHANGEABILITY" AN ASSET OF PREST-O-LITE

Federal Judge Says Searchlight Cannot Profit by System Built Up by Rival—Calls It Unfair, if Not Morally Wrong.

Aside from its rights to the trademark which is placed upon its gas tanks, the Prest-O-Lite Co., of Indianapolis, has created for its product an intangible and incorporeal quality of "exchangeability," the use of which is not permissible by any competitor, according to a decision handed down late last week by Judge Hollister in an action brought in the United States District Court for the Southern District of Ohio, sitting in Cincinnati, against Arthur C. Davis and Victor Gluchowsky, who trade as Coughlin & Davis and who handled Searchlight gas. The suit was brought to enjoin them from putting out the Searchlight product in Prest-O-Lite tanks, and Judge Hollister in very direct language gave the Prest-O-Lite Co. a decree.

The facts alleged in the complaint were that Coughlin & Davis had been supplied by the Searchlight gas and that the dealers had sold the tanks to car owners in Cincinnati; the defense included a claim that after the tanks were sold by the Prest-O-Lite Co. the ownership passed out of that company's hands and that, moreover, the refilled tanks bore a label stating that the tanks contained Searchlight gas. The Prest-O-Lite dealers' contracts were claimed a violation of the Sherman anti-trust law, but the court failed to attach much weight to this contention.

Other Federal courts have upheld the Prest-O-Lite Co.'s right to its trademark, but this is the first time decision has been passed upon its rights in the "exchangeability" which has been created through the building up of its service system. After discussing the claims, Judge Hollister said:

"And so the defendants, in order to sell Searchlight gas, the profit of which goes to them, and the Searchlight company which charges defendants' tanks with its gas, exchange with the user Prest-O-Lite tanks charged with Searchlight gas for empty Prest-O-Lite tanks and thereby reap a very considerable part of the value of the quality of exchangeability inherent in every tank the complainant sells. There is surely something unfair in this, if not morally wrong.

"Fair competition between the two systems is excellent, but the acts complained of do not involve competition between two systems. They involve a use by the defendants in the furtherance of their competitive business, and the appropriation, of something of value which actually belongs to their competitor. Instead of using their own system in competition with complainant's system, they actually make complainant's system the very medium through which their gas was introduced to complainant's customers . . . and it is equally clear that if such use is permitted, the result would be a total destruction of the complainant's business system. . . . The result of this would be not only disastrous to the business system built up by complainant but necessarily destructive of any similar system."

Adding that no one has the right to appropriate the quality of interchangeability created for its tanks by the Prest-O-Lite Co., Judge Hollister said, "Defendants' wrong does not lie in the mere use of old Prest-O-Lite tanks, but in using them to destroy the complainant's business system for the purpose of, or with the result of, injuring the complainant's business."

The court stated that "It is not like a label on a box or a package or a bottle," and "It would seem . . . that when an article has become known to the trade by its shape, size, color and general appearance and is identified by these or some of them, it cannot be used for competition."

Taking up the matter of the pasted-on label, the court held that it did not afford adequate protection for the rights of the Prest-O-Lite Co. Referring to the fact that certain parts of the label were inconspicuously printed, Judge Hollister said, "The Label is so devised that the negation of the contents being Prest-O-Lite gas is so placed and in such comparatively small type that one cannot but discover purpose in choice of description and selection and arrangement of type.

"Every time they sell a charge of Searchlight gas in a Prest-O-Lite tank, they either deceive the user desiring Prest-O-Lite gas (what he had before) or the purchaser knowingly takes Prest-O-Lite tanks charged with Searchlight gas. In one case they palm off their own goods as complainant's and trade on complainant's good-will; in the other they sell their own goods (gas) only because the purchaser knows he can, by having a Prest-O-Lite tank, participate in the system of business established by the complainant. In either case the complainant loses and the defendants gain by defendants' use of something which belongs to the complainant.

"The defendants' right to purchase old Prest-O-Lite tanks cannot be doubted, but they have not shown that it is cheaper to buy them than the genuine Searchlight tanks. If Searchlight gas is as good as or better than Prest-O-Lite gas, why not sell Searchlight gas and Searchlight tanks?"

STUDEBAKER CORPORATION CLOSES 5 MORE BRANCHES

Continues its Policy of Turning Retail Establishments into Dealerships—Branch Managers Head Four of New Organizations.

Pursuing its policy of discontinuing retail branches, the Studebaker Corporation has turned five more of its salesrooms over to dealers' organizations, the branch manager in four cases becoming the head of the new retail business. The cities affected are New York, Chicago, Salt Lake City, Denver and Minneapolis and St. Paul.

The Phelps Motor Car Corporation succeeds the branch in New York City and will retain the retail salesrooms at Broadway and West 59th street, while the wholesale distribution in the metropolitan district will hereafter be handled by the Studebaker Corporation from the headquarters of its horse-drawn vehicle business at 142 West 52d street. George H. Phelps, former branch manager, heads the new company, with Fred Sanford, formerly assistant manager, as vice-president and sales manager, Hanson Robinson, who has served long in the Studebaker sales organization, becomes branch manager.

Lafayette Markle, formerly Chicago branch manager, has formed the L. Markle Co. and has taken over the retail business and location at Michigan avenue and 21st street. C. R. Dashiell, formerly retail sales manager, and H. R. Levy, a salesman, are vice-presidents. The wholesale branch continues in the same location, but with B. F. Kinaman, a Studebaker veteran, as manager and E. M. Lubeck as his assistant.

In Denver, F. C. Cullen has supplanted the retail branch with the Automobile Sales Corporation; he retains the former salesrooms and retains much of the old staff, including former Retail Sales Manager C. W. Hulbert.

C. A. Quigley, who formerly directed sales in Utah and some adjoining territory, with headquarters in Salt Lake City, now is a dealer and distributer in the same territory with about 30 subdealers.

The Minneapolis and St. Paul retail branch has been taken over by A. A. Gray, former branch manager, who now will conduct the business in the Twin Cities for himself.

Velie Reestablishes Cincinnati Branch.

After having abandoned that city some two years ago, the Velie Motor Vehicle Co., of Moline, Ill., has reestablished its branch in Cincinnati. It is located at 123 East 7th street and is in charge of Ferd Wagner.

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WOMAN AT OR NEAR BOTTOM OF MILWAUKEE BANKRUPTCY

August John Says Elsie Forced Motor Maker's Failure by Refusing to Pay for Stock—Seeks to Tie up $30,000 Notes He Gave.

It transpires that there was a woman at the bottom, or near the bottom, of the failure of the Milwaukee Motor Co., which went into the hands of a receiver on June 18th. The fact was brought out last week when August F. John obtained a court order restraining Elsie K. John from disposing of two notes which he had given her as security for $30,000 he had borrowed to invest in the Milwaukee company, which manufactured engines for the automobile trade.

With the money, John purchased 465 shares of stock, on the understanding that Elsie and H. G. John, Ernest G. Miller and Fred A. Miller would also invest in the company. They did so, it is stated, to the extent of 1,313 shares and, in due course, August F. John, in pursuance of an agreement, was elected a director and vice-president and made general manager of the company at a salary of $5,000 per annum.

Soon afterward, he alleges, Elsie and H. G. John and Ernest Miller purchased 47½ additional shares and thereby obtained a majority and control of the company, and, obtaining it, at once proceeded to divest August John of authority. They reduced the board of directors from five to three, those who remained being Ernest Miller, J. C. Coerper and H. G. John, the latter of whom became general manager, August John being reduced to a clerical position.

Despite this turn of fate, August John declares he submitted and later, when it was announced that the concern needed more capital, offered to surrender one-third of his stock if the others did likewise, with the provision that Ernst Miller purchase the surrendered stock. It is alleged that all agreed to this arrangement by signing a contract. The total value of the stock turned over at this time was $83,333.33. Ernest Miller bought a number of shares of the stock turned over, for which he paid $37,794.50. Elsie John also bought 417 shares, but, it is asserted, refused to pay for them. The plaintiff states in his complaint that "she refused to pay for the shares so that the company would be forced into bankruptcy."

The plaintiff declares that before the bankruptcy proceedings were instituted, his shares of stock were worth $31,000. He now alleges that his obligation to redeem the notes held by Elsie John is not obligatory, as the defendant was the cause of the insolvency, whereby he lost $31,000.

One Zenith-Stromberg Suit Dismissed.

Exactly paralleling a similar suit last year, when their positions were reversed, the suit for infringement of the Baverey patents, covering the plain tube principle, brought by the Zenith Carburetor Co., of Detroit, against the Stromberg Motor Devices Co. came to a sudden and unexpected end when ready for trial in the Federal court in Detroit last week. On motion of the plaintiff's counsel the suit was dismissed, although the Stromberg legal representatives declared their readiness to go on with the case. The Zenith people explain that the suit was dismissed because the Stromberg interests are no longer active in making or marketing the particular feature which they were claimed to infringe, the dismissal of the suit saving the expense and delay incident to carrying it to a conclusion.

The countersuit brought by the Stromberg company against one of the Zenith Carburetor Co.'s customers remains on the calendar, and will probably come up for hearing next month. The customer in question, the John A. Bender Co., is only a nominal defendant, however, as the action is being defended by the Zenith company itself. In this case it is charged that the Zenith Carburetor Co. infringed the O'Hara patent, No. 684,662, and the Richard patent, No. 791,501, both of which are owned by the Stromberg Motor Devices Co.

Wahl Ends Life with Carbolic Acid.

George J. Wahl, manager of the Wahl Motor Co., of Detroit, committed suicide at his home in that city on Sunday last, 5th inst. He was found dead in his garage in the rear of his home, a bottle which had contained carbolic acid, which lay beside him, telling the manner in which he had sought death. He was 35 years of age and is survived by his widow and a five-year-old son. Wahl had thrown extraordinary energy into the company which bears his name, and which is just about firmly establishing itself, and the only possible cause that can be ascribed for his rash act is that he suffered a temporary mental aberration because of his close application to business.

Oakland Sues Home City for Damages.

The Municipality of Pontiac, Mich., has been made defendant in a suit for $30,000 damages brought by the Oakland Motor Car Co. The damages are alleged to have been sustained when water from a leaky drain backed into the basement of the Oakland factory. Among other things, the complaint alleges "that the city failed in its duty to construct, lay out and maintain the said drain, even after notified."

"UNCLE SAM" PRESENTS HIS CARD AT FORD CAR WORKS

Wants to Know if Price Maintenance Doesn't Infringe Anti-Trust Law—Queer Outgrowth of Suit Against Price-Cutter.

Although the first steps were taken months ago, it just has become generally known that the Attorney General of the United States has been inquiring into the affairs of the Ford Motor Co., of Detroit, because of a charge of violation of the Sherman anti-trust law growing out of its suit against the Union Motor Sales Co., of Dayton, Ohio.

The latter, it will be recalled, was charged with violating Ford patents, and other Ford rights, by offering Ford cars for sale at less than list prices, and later was called to task for violating an injunction.

The effort of the Ford company to maintain its price is the basis of the allegation of violation of the anti-trust law, the charge being founded on the recent ruling of the Supreme Court that manufacturers have not the right to fix the re-sale price of goods.

The Dayton concern retorts that any violation of the court's injunction it may have committed was due to efforts of the Ford company to induce it to offend in the endeavor to obtain evidence.

The Ford company denies that it engaged in such inducement, but James Couzens, vice-president and treasurer of the company, states that when the Federal investigator first appeared at the Ford office he was told that the Ford company would admit everything, being confident that it was well within its rights.

Sues for Payment on W., C. & P. Assets.

Claiming that Chester Griswold, George A. Ellis and Howard C. Dickinson, who agreed to buy the assets of Wyckoff, Church & Partridge, Inc., failed to make the payment of $50,000 which was due July 30 last, John S. Sheppard, trustee in bankruptcy for the corporation, has filed suit against the trio in the Supreme Court for New York county; he claims the three entered into an agreement November 30, 1912, with H. B. Hollins & Co., bankers, as guarantors, to purchase the assets for $150,000, to consist of three payments, respectively four, eight and twelve months after the transfer of the property.

The assets of the corporation, which, among other ventures, held the Commer rights in America, included holdings in the Standard Auto Co. of New York and the Decauville Auto Co. and were subject to a mortgage of $248,000.

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86 CARS ALLOTTED SPACE FOR FIRST NATIONAL SHOW

Sixteen "New Faces" to Appear in Grand Central Palace—84 Cars at Chicago Exhibit—Other Business at Chamber's Meeting.

If ever doubt existed regarding the feasibility of placing on the three floors of Grand Central Palace all of the car exhibits that will constitute the New York section of the 14th Annual National Automobile Show of the Automobile Chamber of Commerce which will hold the boards between January 3d and January 10th, it was dispelled on Thursday last, for 86 makers of pleasure cars were allotted space and ample room for every one of the 86, of which six are electric makers, has been found; and there still remains plenty of space for the accessory exhibitors, who will occupy the whole of the fourth floor and a good part of the third floor, and who will be allotted space today (Thursday) by the Motor and Accessory Manufacturers.

In Chicago the exhibits will be housed in the Coliseum and the First Regiment Armory, as heretofore, allotment of space having been made to 77 makers of gasolene cars and seven makers of electrics. As usual, the allotment was made according to production, the largest producer among members of the Chamber receiving first choice and those who are not members being allotted space in their order of choice by lot.

Altogether, some 90 applications for space in Grand Central Palace and 100 applications for space at the Chicago show were received, and as the list now stands, New Yorkers will see five more makes of gasolene cars than they did last year and three fewer of electrics; in Chicago, there are seven fewer gasolene cars then there were last year and six more electrics.

Choice of space was governed by production figures, and as a result the Overland and Cadillac exhibits will have "pride of place" and come first in the line of vision of those who mount the marble stairs in the Palace; their spaces are directly at the head of the stairs, and behind them are the Buick, Studebaker, Hupmobile and Packard spaces. In the Coliseum in Chicago the Franklin and Krit spaces face the entrance on either side of the central aisle, Cadillac and Overland being directly at the junction of the two main aisles. Although electrics will be grouped on the second floor of Grand Central Palace, in Chicago they will be placed both in the Coliseum basement and in the Armory. The complete list of exhibitors at the two shows, except for half a dozen whose applications for space came too late to come before the meeting, is as follows:

NEW YORK.

First Floor.

Overland	Peerless
Cadillac	Velie
Buick	Abbott-Detroit
Packard	Mitchell
Chalmers	Pope-Hartford
Hudson	Winton
Pierce-Arrow	Studebaker
Hupmobile	Paige-Detroit
Oakland	Regal
White	Franklin
Reo	Premier
Cole	Lozier
Maxwell	Kissel
Rambler	Stearns
Locomobile	Apperson
Krit	

Second Floor.

Cartercar	Case
Stevens-Duryea	Haynes
Marion	Moon
American	Garford
National	Oldsmobile
Auburn	Marmon
Imperial	Mercer
Fiat	Stutz
Moline	Henderson
Pathfinder	Pullman
Speedwell	Westcott
McFarlan	Great Western
Kline	Herreshoff
Austin	

Third Floor.

Paterson	Metz
King	Cornelian
Partin	Palmer-Singer
Havers	Keeton
Vaughan	Thomas Howard
McIntyre	Simplex
Lyons-Knight	Davis
Norwalk	Twombley*
Mondex-Magic*	Chandler
Lomax	Am. Motorette*

Electrics

Standard	Ohio*
Detroit*	Baker*
Waverley*	Rauch & Lang*

CHICAGO ONLY.

Glide	Crow-Elkhart
Colby	Vulcan
Pratt-Elkhart	Cricket
McCord	

Electrics

Chicago	Broc
Argo	Borland-Grannis
Century	Woods

* Will not exhibit at Chicago.

Examination of the list brings to light that of the makes listed, some 16—all driven by gasolene—are new to show lists, or have been so long absent from them that their appearance is not altogether familiar. Nor do all the names appear on the list that last year swelled its size. Of the new comers, several, including the Cornelian, Lomax, Cricket and Twombley, are cyclecars, or are so near to being cyclecars that they may be so styled without fear of straining the meaning of the term. The others, with the exception of the Mondex-Magic, are full-sized cars of orthodox construction; the Mondex-Magic, however, is brand new in that it will carry a Magic motor, which is distinguished by sliding crescent valves instead of the usual poppet members.

In addition to allotting space, the Chamber of Commerce held a business meeting at which, among other things, the subject of exhibits at the Panama-Pacific Exposition in San Francisco, in 1915, was again discussed, but to no definite purpose. Although the members of the Chamber previously had voted against a special automobile building, and favored displays in the Transportation Building, the subject refuses to down and there is a bare possibility that the so-called Automobile Palace may yet come to pass.

In order that its title may properly designate its scope, the Chamber also considered a change of title. As soon as the necessary preliminaries are arranged, the body probably will be known as the National Automobile Chamber of Commerce.

Resolutions deploring the death of George W. Bennett, the Willys-Overland representative in the Chamber, and one of its most useful and active members, were adopted, and James Newton Gunn, once vice-president and still a director of the Studebaker Corporation, was chosen as his successor as a director of the organization.

Few Vehicles for Electrical Show.

Apparently, the Electrical Show which is to occupy Grand Central Palace from October 15 to 25, is not to be quite as representative an exhibition of electric vehicles as at first appeared would be the case. So far, only four makers of electric vehicles have signified their intention of exhibiting their products—only one of them is a pleasure car—and the exhibitors of merchandise of interest to those in the electric vehicle trade is confined to 10 spaces.

The complete list of exhibitors either in the electric vehicle trade or closely alllied to it is as follows: Edison Storage Battery Co.; Thomas A. Edison, Inc.; General Vehicle Co.; Manhattan Electric Supply Co.; Electric Storage Battery Co.; Ward Motor Vehicle Co.; Philadelphia Storage Battery Co.; Westinghouse Electric & Mfg. Co.; Rhineland Mch. Works; Gould Storage Battery Co.; General Motors Truck Co.; Ceneral Electric Co.; H. W. Johns-Manville Co.; Standard Electric Car Co. What the exhibition is lacking in vehicle displays, however, it is likely to make up in other things for, as was made plain in Motor World several weeks ago, there will be a model garage and repair-shop with all their various contrivances in action, and also a model battery room with a corps of able demonstrators and instructors in charge. As usual, the third floor will be occupied by a demonstration track, where any of the vehicles on view may be tried by those who are interested in them.

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The Week's Incorporations

Philadelphia, Pa.—Mecca Tire Co., under Delaware laws; authorized capital, $100,000.

Grand Rapids, Mich.—Michigan Tire Co., under Michigan laws; authorized capital, $20,000.

Detroit, Mich.—White Motor Sales Co., under Michigan laws; authorized capital, $5,000. Corporators—A. L. Waldorf, W. J. Hays.

Kalamazoo, Mich.—Kalamazoo Motor Vehicle Co., under Michigan laws; authorized capital, $35,000. Corporators—Frank G. Clark and others.

Boston, Mass.—Endurance Tire & Rubber Co., under Massachusetts laws; authorized capital, $3,000. Corporators—John H. Cooper, John L. Hamilton.

Lansing, Mich.—Acme Engine Co., under Michigan laws; authorized capital, $80,000; to manufacture engines. Corporators—Lawrence Price, Jacob Gansley, Fred Thoman.

Liberty, Ind.—Stanley Motor Co., under Indiana laws; authorized capital, $5,000; to deal in motor vehicles. Corporators—Ray C. Connor, Nathan F. Stanley, C. C. Connor.

New Orleans, La.—Pop's Auto & Taxi Service, Ltd., under Louisiana laws; authorized capital, $5,000. Corporators—Wm. P. Johnston, M. R. Johnston, G. R. Guillemet.

Canal-Fulton, Ohio—Fulton Drop Forge Co., under Ohio laws; authorized capital, $10,000; to manufacture general forgings. Corporators—W. C. Laiblin, C. A. Irwin, H. D. Pownall.

Lynn, Mass.—Eastern Avenue Garage, Inc., under Massachusetts laws; authorized capital, $10,000; to operate a garage. Corporators—W. H. Beede and William J. Meloy, both of Lynn.

Boston, Mass.—Somerset Garage Co., under Massachusetts laws; authorized capital, $15,000; to operate a garage. Corporators—J. J. Shea, 3 Maitland street; Louise Lucier, Cambridge.

New Bern, N. C.—Glenbernie Transportation Co., under North Carolina laws; authorized capital, $50,000; to carry passengers by boat and automobile. Corporators—Clyde Eby and others.

Ottawa, Can.—S. G. Gay Co., under Canadian laws; authorized capital, $200,000; to manufacture motor vehicles, carriages, buggies, etc. Corporators—Simeon G. Gau, Chester T. Bangs, L. W. Nichols.

Chicago, Ill.—Universal Auto Supply Mfg. Co., under Illinois laws; authorized capital, $50,000; to manufacture and deal in machines, mechanical devices etc. Corporators—C. S. Tuttle. G. Burke, Joseph Frese.

Columbus, Ohio—Gaither Auto Co., under Ohio laws; authorized capital, $10,000; to manufacture and deal in motor cars. Corporators—William Gaither. Allen Leamy, Jesse J. Brown, William B. Leamy, L. E. Andrews.

Bronx, N. Y.—Gasoline & Oil Supply Co., Inc., under New York laws; authorized capital $10,000. Corporators—James M. Pugh, 1978 Bathgate avenue; John H. Story, 2260 Ryer avenue; Walter W. Friend, 1807 Mt. Hope avenue.

Cleveland, Ohio—National Motor Supply Co., under Ohio laws; authorized capital, $5,000; to manufacture and deal in motors of all kinds. Corporators—V. H. Meyer, H. G. Schowe, F. F. Abbott, N. E. Sargent, Fred D. Demuth.

Denver, Col.—Standard Automobile Mfg Co., under Colorado laws; authorized capital, $500,000; to manufacture commercial vehicles and accessories. Corporators—J. W. Crook, George L. Kelley, F. M. Stanard, Frank McGee, R. C. Turner.

Detroit, Mich.—Gasolean Co., under Michigan laws; authorized capital, $7,000. Corporators—Fred E. and Almon C. Holmes, John B. Whelan, William L. Wild, J. Edward Bland, Cecil R. Crary, William L. Carpenter, Flavius L. Brooke.

Yonkers, N. Y.—Colonial Garage Co., under New York laws; authorized capital, $10,000; to operate a garage. Corporators—George H. Mills and F. S. Jones, both of 154 Nassau street, New York; Charles Smith, Central avenue, Yonkers.

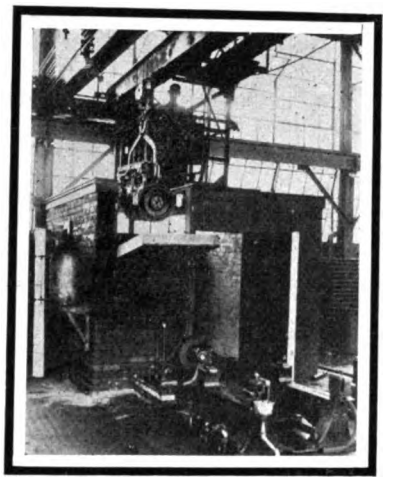
Brooklyn, N. Y.—Safety Rubber Tire Co., under New York laws; authorized capital, $500; to manufacture and deal in all kinds of rubber tires. Corporators—Frank Kronenberg, Minnie E. Kronenberg and William Kronenberg, all of 497 Dean street.

Chicago, Ill.—Rail & Auto Sundries Co., under Illinois laws; authorized capital, $5,000; to manufacture and sell motors of all kinds, railway and auto supplies and accessories. Corporators—William W. Bishop, Raphael B. Jamison, William J. Anderson.

Guilford, Me.—Tire Buyers, Inc., under Maine laws; authorized capital, $600,000; to manufacture, buy, sell and deal in automobile tires, casings, tubes and also to deal in motor cars, etc. Corporators—Henry Hudson and James H. Hudson, both of Guilford.

New York, N. Y.—Brockway Motor Truck Sales Corporation, under New York laws; authorized capital, $15,000. Corporators—Richard C. Sack, 71 Elmwood street, Woodhaven; John F. Soby, 400 Simpson place, Peekskill; William N. Brockway, Cortland.

"SILENT" ROOM FOR MOTOR TESTS



WHEREIN ENGINES ARE TESTED IN CONTINENTAL FACTORY IN DETROIT FOR PURPOSE OF DETECTING NOISES

Changes in Capitalization.

Cleveland, Ohio—A. E. Davis Motor Co., from $10,000 to $50,000.

Connersville, Ind.—Howard Motor Car Co from $10,000 to $100,000.

Akron, Ohio—Swinehart Tire & Rubber Co., from $800,000 to $1,000,000.

Cleveland, Ohio—Automobile Signal & Appliance Co., from $25,000 to $50,000.

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POPE DISCLOSES EARNINGS FOR YEAR ENDING JULY 31

Gross Sales Increased, but Increase of Expenses Netted $67,000 Loss—Total Assets Are Listed at $9,090,081.76.

Despite the fact that its gross sales in both automobile and bicycle departments showed an increase over previous years, the Pope Mfg. Co.'s fiscal year, which ended July 31st last, netted a loss of $67,551.28, as against a profit of $251,290.02 during the previous fiscal twelvemonth, at which time the Pope surplus stood at $1,012,920.87.

In 1912, dividends of 6 per cent. on the preferred and 1 per cent. on the common stock were paid, but when this year both dividends were passed it became known that the company would not be able to make a favorable showing and its balance sheet, which just was made public this week, therefore caused small surprise.

President Albert L. Pope attributes the loss to unusual expenses incurred in the development of new motorcycles, and also to the necessity of adding engine starters and other equipment to automobiles, the demand for which had not been foreseen. The heavy interest charges occasioned by the large amount of money borrowed at high rates was another factor in the case.

For the 1912 fiscal year, the sales amounted to $3,374,112.56, on which was made a net profit of $251,298.02. This year the total sales are not given. The income from operation, however, totals $259,239.40, as against $316,877 last year.

The assets of the Pope company are listed at $9,090,081.76, of which $6,241,070 is represented by land, buildings, equipment, machinery, patents, good-will, etc., of which sum $3,734,109.95 is represented by the patents, good-will, etc. Last year all of these assets were carried as one item at a valuation of $5,620,251.

In presenting the report, Col. Pope said that gross sales showed an increase over previous years, the increase being largely due to a new model car at a low price and new models of motorcycles, all of which were placed on the market for the first time during the current year. The extra equipment was not provided for in the selling price. The balance sheet follows:

POPE BALANCE SHEET, JULY 31, 1913.

Assets.

Patents, Licenses, Trade Marks, Good Will, etc.			$3,734,109.95
Land, Buildings, Equipment, Machinery and Tools			2,506,960.29
Deferred Charges and Prepaid Expenses, including Prepaid Insurance, Advance Work on Models for Future Production, Prepaid Discounts and Commissions			169,198.33
Contract to be Liquidated by Deferred Installments			160,241.66
Inventories of Materials, Supplies, Unfinished and Finished Product		$1,688,747.80	
Accounts, Drafts and Notes Receivable, (Less Reserves for Bad and Doubtful Accounts)		715,700.64	
Cash and Cash Items in Bank and Office, including Fund for Payment of Unclaimed Dividends		115,123.09	2,519,571.53
			$9,090,081.76

Liabilities.

Capital Stock—			
Authorized and Issued:			
25,000 Shares Preferred	$2,500,000.00		
40,000 Shares Common	4,000,000.00	$6,500,000.00	
Less—Stock in Treasury:			
1,718 Shares Preferred	$171,800.00		
3,092 Shares Common	309,200.00	481,000.00	$6,019,000.00
Two-Year 6% Coupon Gold Notes Maturing April 1, 1914			1,000,000.00
Loans Payable		510,000.00	
Accounts Payable, including Accrued Interest on Notes, Accrued Taxes, Royalties and Commissions		534,314.67	
Pay Rolls Accrued		24,068.63	
Deposits on Orders		45,848.16	
Unclaimed Dividends		191.00	1,114,422.46
Reserve to Provide for Reduction in Inventories, and Drafts Receivable			96,463.61
Reserve for Contingent Claims			19,145.10
Surplus July 31, 1912	$1,012,920.87		
Less—Net Loss for Year Ending July 31, 1913	67,551.28		
	$945,369.59		
Less—Dividends Paid:			
4½% on Preferred Stock	104,319.00		841,050.59
			$9,090,081.76

Statement of Earnings.

Income from Operations (after deducting Producing Costs, Current Repairs and Maintenance Charges, Administrative, Office and Selling Expenses, and including Miscellaneous Earnings, Discounts, Interest and Royalties Received)			$259,239.40
Deduct—			
Miscellaneous Losses and Expenses, including Discounts and Provision for Losses on Bad and Doubtful Accounts		$81,867.31	
Interest, Discount and Commissions on Loans		148,459.76	230,327.07
			$28,912.33
Deduct—			
Reserve to provide for reduction in value of Inventories, and Drafts Receivable			96,463.61
Net Loss			$67,551.28

INTER-STATE CONSIGNMENT WEAPON IN DEALER'S HAND

When Pardee and Manufacturer Fall Out Dealer Attaches Cars Shipped Him—Payment of Debt With Cars Causes Dispute.

When the Inter-State Automobile Co., of Muncie, Ind., recently shipped four "sixes" to Col. Kirby C. Pardee, its metropolitan distributer, it probably never thought these same cars would be used as the means of securing a claim against it by its dealer in a dispute over commissions; but such proved the case when Col. Pardee last week brought a suit against the manufacturer for $3,360.80 in the Supreme Court for New York county and secured an attachment for that amount. The attachment was levied on the cars, which had been shipped to Pardee on consignment and are still the Inter-State's property.

The dispute is based upon alleged sales by the manufacturer in the dealer's territory. He claims to have signed a year's contract May 8 of the present year to distribute Inter-States in Greater New York, Long Island, Staten Island and Westchester county. His commission was to be 25 and 5 per cent. on model 45's and $759.75 on model 40's. Now, however, he claims that the manufacturer, in payment of debts to people in the New York territory, placed three 45's and two 40's, on which Pardee demands commissions. He fixes the total commission on the five cars at $3,875.25 and says he was given but $514.45, leaving a balance due of $3,360.80.

About two days prior to the institution of the suit Col. Pardee declared his dealership contract cancelled and ceased to sell Inter-States. He formerly handled this and one other line, and since dropping the Inter-State has supplanted it with the Havers "six." A. Edward Schwartz, who is a general sales agent for the Inter-State, formerly occupied an office in Col. Pardee's establishment, but has located elsewhere since the rupture of relations.

Shaler Prepares to Double Output.

The C. A. Shaler Co., of Waupun, Wis., has broken ground for a three-story addition which will practically double its present capacity. The new building will be devoted to the production of the Shaler garage steam vulcanizer. The original plant was erected in 1911, and though it has been running 23 hours a day practically all summer it has been unable to cope with the demand, which fact serves as an indication of the remarkable growth of the vulcanizing business.

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In the RETAIL WORLD

Hubbard & Witt plan to erect a garage in St. Paul, Minn.

H. C. Baxter, of Princeton, Iowa, has erected a garage.

J. W. Hartsuck, of Albia, Ia., is erecting a garage; it will stand on South Main street.

John C. Drew has sold his interest in the Warwick (N. Y.) Auto Co. to Isaac D. Vance.

Herbert L. Clark, of Wayne, Pa., has secured plans for a two-story brick and stone garage.

Charles Peterson, formerly of El Monte, Cal., has opened a garage in Covina, in the same State.

T. Dewitt Beekman, of Dundee, N. Y., plans to erect a garage; it will stand on Water street.

O. J. Meyer, of Milwaukee, Wis., plans to build a garage; it will stand at 2826 Cedar street.

J. W. Collins, of San Antonio, Tex., will open salesrooms on Alamo Plaza; he has the Dorris agency.

E. W. Griffin is building a garage in Alhambra, Cal. It is located on Main street, near Wilson street.

B. L. Zapp, of La Grange, Tex., plans to erect a garage and supply store; the estimated cost is $2,000.

J. G. Stratton, of Ilion, N. Y., has taken over the garage business of F. J. Dyett; Stratton will continue it.

O. A. Rhodin, of Los Angeles, plans to build a garage at 1664 West Washington street; it will cost $4,800.

A. S. Hahn, formerly of Hutchinson, Kan., has purchased the Stafford (Kan.) Garage; he will operate it.

B. C. Brown and F. D. Frazier are about to build a garage in Dufur, Ore. It will adjoin Frazier's blacksmith shop.

E. B. Grabt and W. E. Roberts have purchased the Central Garage in Lodi, Cal. They will continue the business.

G. H. Prather and Earl Lupfer have purchased the garage of J. M. Hansell, in Tampa, Fla. They will operate it.

The Duluth (Minn.) Auto Co. has taken possession of new quarters; they are locatetd at 329 East Superior street.

Edwin J. Thomas, of Youngstown, O., has secured plans for a garage to be erected on Elm street, near Madison avenue; Thomas stocks the Kline line.

E. L. Smith, of Clarksville, Ia., has purchased the interest of Henry Klunder in the Cutler & Klunder Garage; the style will now be Cutler & Smith Garage.

Hiram C. Gibson has awarded the contract for a garage, 50 x 60 feet, which he will have erected in South Deerfield, Mass. The site is on South Main street.

Dudley F. Benton and Walter Storms have entered the trade in Poughkeepsie, N. Y., under the style Benton's Garage; they are located at 39 North Clover street.

Frank Zinnel, of Savanna, Ill., has sold his interest in the Clinton Garage to M. Messer; the style now is Messer & Dahler. Zinnel may remove to California.

P. A. Hall, of Minneapolis, and T. L. and P. W. Hall, of Waterloo, Ia., are about to open a garage in the latter city at 418-28 East 2nd street; the style will be Hall Bros.

D. W. Alderman, Jr., formerly of Alcolu, S. C., is about to open a supply store in Florence, in the same State; he has secured quarters at Church and Evans streets.

John I. Bagdzuina, of Chicago, has secured permission to build a one-story garage at 2334-36 South Oakley avenue; the application states that the cost will be $1,000.

P. F. Wicks and Bert Donley, of the Wicks & Donley Hardware Co., of Ashland, Ohio, have become automobile dealers; they have secured the Crow-Elkhart agency.

Ely Kirby and James H. Hubbard, garage operators in Red Bank, N. J., have dissolved partnership; Kirby will conduct the accessory end of the business and Hubbard the garage.

E. M. Miller, of South Pasadena, Cal., who recently purchased the Pierce Bros. Garage, on Blair Oaks avenue, has resold it to McCreary & Ward; the latter will conduct the business.

The automobile livery service of the Hotel Munroe, in Joliet, Ill., has been taken over by Rhodes Bros. They formerly operated the Clinton Street Garage. To new cars have been placed in service.

W. N. Darby, of Cameron, Me., has admitted Burnham E. Shaw to partnership in the Darby Auto & Supply Co. The garage which the concern operates will be improved and the business extended.

W. J. Berrington, of Ritzville, Wash., has sold the Inland Garage, on 1st street, to Stahl & Peoples, of Walla Walla, in the same State; Berrington has taken over the real estate and loan business of E. H. Herring.

Russell H. Erskine and Frederick N. Burr, who operated a garage in Meriden, Conn., on East Main street, have dissolved partnership; Burr has retired and the business will be continued by Erskine and Herbert Baldwin under the style Central Garage.

L. F. Teed and Murrell Ellis have reopened the garage in Devil's Lake, N. D., formerly operated by the State Auto Co. They have changed the style to Great Northern Auto Co. and will handle Packard, Pierce, Stutz and Marion cars. Teed is manager of the Western Union office in that town and Ellis has been an auto polo driver.

Clell Trammell has taken over the Big Four Garage, on Cherry street, Huntington, Ind., formerly operated by Lewis Shinkle and William Richardson; he exchanged his farm of 140 acres in Rock Creek township for the business. The garage carries with it the Studebaker, Maxwell and Overland agencies. The total amount involved in the deal was $37,000.

J. E. Robison, formerly connected with the sales department of the Empire Motor Car Co., of Indianapolis, has entered the trade for himself in Des Moines, Iowa. He has secured the Iowa agency for the Allen line and has opened salesrooms at 413 12th street, where the Cole agency formerly was located. The latter has been moved to the former Cadillac salesrooms on Locust street.

E. H. Bull, formerly sales manager for the Franklin Automobile Co., of Syracuse, N. Y., in the northwestern district, has taken over the retail business in Denver under the style Colorado Motor Car Co. He formerly was a division sales manager for the New York Leather Belting Co., and is a brother of C. W. Bull, of Bull & Young, who recently took over the Franklin retail business in Syracuse.

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PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

F. R. Pendleton has been appointed Eastern sales manager of the Commerce Motor Car Co., of Detroit, maker of the Commerce truck. Previously he was with the General Motors Co.

N. Bowland has been appointed advertising manager for the Duff Mfg. Co., of Pittsburgh, Pa., manufacturers of Barrett jacks. Previously he performed the same service for the Buffalo Forge Co.

J. B. Magee has been appointed manager of the branch in Phoenix, Ariz., which just has been established by the United States Tire Co. Previously he was attached to the advertising and publicity department.

S. M. Udale, former assistant research engineer in the Studebaker Corporation, has joined the staff of Joseph Tracy. He will have charge of the latter's laboratory and motor testing plant in Rutherford, N. J.

W. G. Miller has been promoted to the post of sales manager of the Pullman Motor Car Co., of York, Pa. He is not strange to his duties, however, as he has been a member of the Pullman staff for several years.

John A. Boyle and James A. Holihan, respectively vice-president and general manager and assistant general manager of the Briscoe Mfg. Co., of Detroit, have resigned their offices. Their resignations took effect immediately.

Harry M. Robins, sales manager for the Ames Motor Car Co., of Owensboro, Ky., has resigned that position. While his future plans are not definite, it is probable that he will engage in the manufacture of parts in Michigan.

J. H. Mack, for many years with the Alco Boston branch, has joined the selling force of the Autocar Co., of Ardmore, Pa. He becomes supervisor of the sub-stations of the Autocar Co. in New England, with headquarters in Boston.

E. G. Bland has been appointed manager of the Detroit branch of the Jackson Automobile Co. He succeeds E. V. Chilson, who has been transferred to the factory sales department in Jackson, Mich., to which Bland previously was attached.

Wallace E. Wilber has been appointed factory manager of the Detroit-Goodspeed Mfg .Co., of Detroit. Because of his health, Wilber has not been engaged in business for about a year, but previous thereto he was one of the assistant superintendents of the Cadillac Motor Car Co.

Joseph A. Anglada has disposed of his holdings in the Anglada Co., of Detroit, manufacturers of demountable rims and automobile accessories, and has resigned the presidency of that company; he has acquired an interest in a company which will manufacture a small car of his design.

James T. Wilson, for four years buyer for the Durant-Dort Carriage Co., of Flint, Mich., has been appointed purchasing agent of the Buick Motor Co. He succeeds E. J. Copeland, who resigned to become general manager of the Corcoran Lamp Co., of Cincinnati, an office, however, which he will not assume until January 1st.

James W. Wellington, manager of the Maxwell-Newcastle Co., has resigned that office, to which he was appointed soon after it was acquired by the Maxwell Motor Co. Previously Wellington was one of the vice-presidents of the United States Motor Co. and one of the few officers who remained in the service of its successor, the Maxwell Motor Co.

C. O. Brandes has been appointed manager of the expert department just established by the Firestone Tire & Rubber Co., of Akron, Ohio. Although having been identified with the rubber trade for the greater part of the last eight years, Brandes is a German by birth, and maintained a residence in Germany until 1905, which implies an intimate acquaintance with foreign conditions.

G. A. Coats and J. B. Barcus have been appointed district managers for the Haynes Automobile Co., of Kokomo, Ind. Coats, who previously was with the Michigan Motor Car Co., will have the Wolverine State as his territory, while Barcus, formerly identified with the Marathon Motor Works, of Nashville, Tenn., will represent the Haynes interests in Missouri, Kansas, Nebraska and Oklahoma.

R. W. Phelps, at one time sales manager of the Great Western Automobile Co., and later advertising manager of the Moline Automobile Co., of East Moline, Ill., has resigned the latter office to become president of the Zip Cyclecar Co., of Davenport, Ia. Associated with him in the new venture are G. Decker French, president of the Iowa State Automobile Association, and Frank W. Skinner, of the Mitchell Advertising Agency.

E. L. Vail, widely known because of his long connection with C. F. Splitdorf, and until recently sales manager of the Hoffecker Speedometer Co., of Boston, has joined the staff of the Waltham Watch Co., of Waltham, Mass., which recently has created an automobile timepiece department. Vail, almost unnecessary to say, will specialize on the Waltham automobile timepieces, of which there are some 14 different models.

Harry E. Field, who on January 1st last was promoted from the management of the Thomas B. Jeffery Co.'s branch in New York to the post of factory sales manager, has resigned the latter office and returned from Kenosha to New York, where he will devote himself to the Kelly-Field Co., distributors of Lee tires, and of which he is a part. Field did not feel that he could relinquish his handsome interest in the latter company without adequate remuneration and his resignation from the Jeffery staff grew out of that fact.

Minor Business Troubles.

A receiver has been asked for the Archey-Atkins Co., of Indianapolis, by the Taylor Mfg. Co., which has a claim of $300; it charges that the company, which has the agency for several lines of cars, is winding up its business, but this is denied.

The Julian Motor Co., of East Syracuse, N. Y., which started about a year ago to build "the highest priced motor," but which encountered financial rocks several months ago, has filed schedules in bankruptcy; the assets are nominally $15,713 and the liabilities $24,942, including wages, $[illegible] The

Although the hearing showed the company to be in a sound condition, a receiver has been appointed for the Halsey Automobile Co., of St. Louis, which fell into trouble last spring because of internal dissension; Charles Cummings Collins was named receiver but will not conduct the business until an appeal in the litigation is decided in Missouri. J. D. Perry Lewis, a stockholder, in March started the litigation, claiming Oscar L. Halsey, the president, has raised his own salary from $4,200 to $20,500 a year. In June the court ordered Halsey to cut his salary and to turn into the treasury $10,000 he is alleged to have made on a sale to the company of a piece of real estate, but Halsey has seemed unwilling to comply.

Recent Losses by Fire.

Richmond, Va.—Frank D. Schulter; garage damaged. Loss, $5,000.

Dallas, Tex.—Stutz Auto Co. and Knight Tire & Rubber Co.; building and contents damaged. Loss, $10,000.

South Manchester, Conn.—Harry Madden, Laurel street; garage and three cars destroyed. Loss, $3,000.

Cleveland, Ohio—Ohio Auto Carriage Co.; building damaged; stock of bodies and body-building machinery destroyed. Loss, $50,000.

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MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R DAVIES

Cleveland
610 Superior Ave. East
C. H HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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APPEAL OF THE ECONOMICAL CAR.

It is slowly dawning on a considerable portion of the trade that in each respective price-class it is the economical car that holds out the strongest appeal to the greatest number of persons. The old idea that the expense of operation, or up-keep, means little or nothing to anyone able to afford an automobile of any sort is being gradually dissipated.

With the realization is coming keener appreciation of the truth that, while power is necessary and desirable, the surest way to obtain it is not by increasing either engine strokes or bores. In other words, the "big" engine is not necessarily the most powerful or efficient engine; as often it is the most wasteful and, therefore, the most uneconomical one.

Abroad, where the price of gasolene is steep and the tax on horsepower high, they were quicker to learn the lesson, and there the comparatively small motor has been brought to a state of efficiency which, when coupled with proper regard for frictional losses in other parts of the car, has resulted in the production of many automobiles which in respect to power, efficiency and economy should long since have given pause to American manufacturers.

With the dawn of reason, it appears probable that the so-called big motor, such as has been in almost general use in this country, has reached its zenith and must be succeeded by one smaller but equally or more powerful and, therefore, more efficient and certainly more economical.

When the subject is calmly considered, it seems rather amazing that Americans have so long remained content with engines consuming approximately twice the fuel of those of foreign manufacture, although in this connection it is fair to say that the difference between the American gallon and the Imperial gallon is seldom, if ever, remarked. The fact that six Imperial gallons are equal to five American gallons accounts for at least a small part of the superior economy of foreign engines but not enough greatly to affect the general result.

"COMMERCIALIZATION" OF THE SPORT.

Abandonment of the Vanderbilt and Grand Prize races by the Savannah Automobile Club, for the same reason that caused the abandonment of so many other events—failure to attract a sufficient number of entries—has caused the president of that Georgia organization to declare that automobile sport has become "commercialized."

The gentleman, however, is in error, or, at any rate, does his judgment no credit. For automobile sport was "commercialized" soon after its inception and has remained so at all stages. It was engrafted on the industry, but despite the fact there never was a time when sport and business remained close together for any considerable period. It is merely a matter of time when they fall apart. Sport is foreign to industry and, though it may serve temporary purposes, it can never become a part of it.

Racing and other forms of sport have served the purposes of the automobile trade, as has been perfectly apparent for some three years. Wishes that are father to the thought, and whistling to keep up courage, may serve individual or special purposes, but they will not affect the ultimate result. The pity of it all is that when even these purposes are served practically no automobile sport will remain, for those who should have made it their duty to do so, and who must have foreseen the result, permitted the sport to become so thoroughly and utterly "commercialized" that amateurism was wholly lost sight of.

The present situation merely adds emphasis to the fact that amateurism, however pooh-poohed, is the foundation of all sport and that without it no sport can or will endure.

GLASS ON THE PUBLIC HIGHWAYS.

Let it be written large: Two boys have been arrested in Cincinnati for throwing glass on the roadway. Although in some States, certainly in many of the larger cities, the doing of that sort of thing constitutes an offense, it is rare that the police take notice of it; when they do so, as in the Cincinnati case, it is worthy of more than obscure mention.

None knows better than the motorist how much broken glass is to be found on the public highways in the course of a day's travel. The fact that it is more or less of a menace not only to automobile or cycle tires but even to pedestrians suggests that a few local crusades, having for their object the enforcement of the anti-glass ordinance, probably would quicken the police consciences, and have a wholesome effect.

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IMPORTERS PARE PRICES TO CONFORM TO DUTY REVISION

But Reductions Are not of Startling Proportions—Why Cut of 15 per Cent. in Tariff May Mean Drop of but 8 per Cent. in Price.

Enactment of the Underwood tariff bill and the institution of the lower duties have been the cause of considerable conjecture in the trade as to just what the new rates on automobiles and allied products would mean in dollars and cents to the American purchasers of these foreign products; that prices would be lower has been certain, but the degree of reduction is only now becoming apparent, as importers promulgate their new price schedules. Some already have adjusted affairs upon the new basis, and those who have not, have calculations well under way.

In the case of cars, the reduction will amount to from 6 and 7 per cent. up to 15 per cent. or better, a concrete illustration being found in a revised price list issued by the Peugeot Auto Import Co., of New York City. The lowest priced car formerly sold for $2,700, but now is listed at $2,500, a cut of 7.47 per cent. The highest priced car sold for $6,250 and now is $5,700, a reduction of 8.8 per cent. The Peugeot importers are also adding to their line the Bebe (Baby) Peugeot, which under the old tariff would have been listed at $1,350 but which now will be sold for $975, a reduction of 27.7 per cent. This is one of the heaviest cuts which thus far has been made in the importing car trade.

The Isotta-Fraschini Motors Co. has effected similar reductions: its highest priced car was $9,000 and is now $8,250, a reduction of 8 1/3 per cent. The lowest priced dropped from $3,500 to $3,250, a cut of 7.1 per cent. The Benz Auto Import Co., whose cars sell for above the $2,000 limit under which the duty on completed cars is cut, is not making any reductions, since it generally imports its bodies on its chassis and therefore has to pay the old duty of 45 per cent. The majority of the other car importers import chassis only and have the bodies built in this country. This permits them to import under the lower duty regardless of the price of the chassis.

Why the reductions are not of greater percentage is puzzling to many, since the tariff on cars invoiced at less than $2,000 was reduced from 45 to 30 per cent. and on chassis the same. The reason as given by one importer is that most people lose sight of the fact that the duty is levied on the foreign invoice price and not on the American selling price.

"Suppose a car is billed to us by the foreign manufacturer for $3,000," he says.

"The old duty was 45 per cent., or $1,350, making $4,350.

"Add $200, say, for expenses, making $4,550.

"Add 20 per cent., or $910, for profit, making $5,560.

"Now, under the new tariff of 30 per cent. everything remains the same except the duty, which is 30 per cent. of $3,000, or $900. This is $450 less than the old duty of $1,350. Subtract this $450 from the $5,560 that the car used to sell for. This leaves $5,110. The cut of $450 is a reduction of but 8 per cent. on the American selling price."

The same system of figuring applies to the numerous other products affected by the new tariff. Importers of bearings plan to give their customers, most of whom are manufacturers of cars, the full benefit of the reduced duty. The duty was dropped from 45 to 35 per cent., as was that on magnetos. The importers of these products state that because of the varying prices which prevail in quantity purchases it is practically impossible to furnish comparative prices under the old and new tariffs.

Peter A. Frasse & Co., importers of Renold chains, stated that the price of chains very likely will drop 10 or 12 per cent. This duty was cut from about 45 to 25 per cent., but, as explained in the case of cars, the reduction in actual selling price is not of such great proportions.

Tire prices, the duty falling from 35 to 10 per cent., mean a saving of from 15 to 20 per cent. to the American trade, despite the fact that the cut in the duty was one of 71 per cent. A comparison is furnished by the Gaulois Tire Cire Corporation, of 49 West 64th street, New York City. The plain tread Gaulois tire of 34 x 4 size formerly sold for $42.90 and now is $35.05, a cut of 16 per cent. The 36 x 4½ was reduced from $53.35 to $44.05, a reduction of 17 per cent. The 37 x 5 tire is now $52.85, whereas it was $64.90, which is a reduction of 18 per cent.

Effects of Advertising Invader Oil.

Whether advertising in the trade papers is profitable has been answered to the satisfaction of the Invader Oil Co., of New York, which, since May last, has conducted a double page advertising campaign in all of the leading automobile publications. While its business had been increasing gradually, as soon as the advertising campaign was undertaken the sale of Invader oils immediately jumped from 114 per cent. in February to 145 per cent. in May and finally to 292 per cent. in September. The average increase for the eight months figures out at 212 per cent.



*Indicates Sanction by A. A. A.

Oct. 6-11, St. Louis, Mo.—Automobile show in Forest Park Highlands.

Oct. 11, Morrison, Col.—Town of Morrison's hill climb.*

Oct. 11, Hanford, Cal.—Kings County Automobile Club's road race.*

Oct. 11, Springfield, Ill.—State Board of Agriculture's track racemeet.*

Oct. 15-25, New York City—Annual electrical exposition and electric vehicle show in Grand Central Palace.

Oct. 17-27, Paris, France—Annual automobile salon.

Oct. 18-19, St. Louis, Mo.—Track racemeet under auspices of J. A. Sloan.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 9-12, Shrevepeort, La.—Track racemeet under auspices of J. A. Sloan.

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

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WORK AND PLAY MIXED ON ELECTRIC MAKERS' PROGRAM

Good Attendance Promised for Convention of Electric Vehicle Association in Chicago—Topics for Discussion.

Much work and enough play and entertainment to relieve the monotony of professional sessions is included in the program for the Annual Convention of the Electric Vehicle Association of America which is scheduled to be held in the La Salle Hotel in Chicago during Monday and Tuesday, 27th and 28th inst. It is expected that fully 200 of the 450 members of the association will travel to the Windy City to listen to the papers that have been prepared. After an address by president Arthur Williams, a member of the Baker Vehicle Co. will address the meeting on "Electric Vehicle Salesmanship"; a representative of Gimbel Brothers' New York store will tell "Why We Adopted the Electric Vehicle"; F. E. Whitney of Philadelphia will report on "Electric Vehicle Tires," and "The Charging of Storage Batteries in Unattended Garages" will be the subject of a paper by M. R. Berry. "The Merchant, the Central Station and the Electric Truck" will be the subject of a paper by F. Nelson Carle, advertising manager of the General Vehicle Co. E. S. Callahan of the National Electric Light Association will talk on "Co-operation Between Electric Vehicle Manufacturers and Central Stations."

Other topics include a discussion of the effect of the electric vehicle on insurance rates, and sandwiched in between the sessions there will be dinners and theater parties and visits of inspection to the various power plants and other points of interest.

K-W is Ordered to Pay Royalty.

By order of the Court of Common Pleas of Cuyahoga county, Ohio, the K-W Ignition Co., of Cleveland, has been ordered to account, at the rate of 50 cents each, to the Unit Coil Co., of Jersey City, N. J., for all of the master vibrators which it has manufactured since March 1, 1912, under patents controlled by the Unit company; the latter is affiliated with the Connecticut Telephone & Electric Co., of Meriden, Conn. Meanwhile, and pending an appeal, the K-W company is also enjoined from manufacturing and selling such apparatus.

The suit grew out of a contract entered into February 20, 1912, between the parties to the litigation, whereby the K-W Ignition Co. was authorized to use master vibrators covered by the Willard E. Dow patent, No. 752,384, and the Ruben Miller, Jr., patent, No. 744,666, the contracts requiring that royalty at the rate of 50 cents each be paid monthly. The plaintiff alleged that no accounting had been rendered since March 1st of that same year and, therefore, brought the suit which just has been decided.

Jeffery Adds a "Six," Remodels "Four."

Promotion of one of its branch managers to the high post of general manager, and the elevation of another to the position of sales manager, has resulted in a semi-revolution of the Thomas B. Jeffery Co.'s Rambler cars.

Instead of restricting itself to a single four-cylinder model, the company hereafter will produce not only a "four" but a "six," and the "four" will differ radically from the present model in design, make-up and price. Its engine will have a bore of 3¼ inches and a stroke of 5¼ inches, developing on the block 42 horsepower. It will also mark the company's adoption of left-hand drive, center control and rear pressure feed gasolene tank. The new model utilizes a new model F & S ball bearing and Bosch magneto and will sell for $1,550, as against $1,875 for the present model, the new price, incidentally, including much more equipment than the old one. Those in position to know declare that the new "four" is by far the most perfectly balanced and in every way the best model that has ever borne the Jeffery nameplate.

The new "six" will be akin to the "four," but for the time being, at least, will employ a Rutenber motor and will list at $2,250

It's Alvan Dodge's Dodge Company.

That it is not always wise to jump at conclusions, and that there are more than two persons of the name of Dodge in Detroit, is indicated by the fact that several publications last week took it for granted that the incorporation of the Dodge Motor Car Co., of Detroit, signified that the two Dodge brothers, who are stockholders in the Ford Motor Co. and who are getting ready to put into effect their plans to build a car of their own, constituted the newly incorporated company. As a matter of fact, however, neither of those Dodges has anything to do with it. It takes its name from Alvan M. Dodge, secretary and treasurer of the Wahl Motor Co., and who is its chief incorporator. The others are Charles E. Kirby, of the Detroit Lubricator Co.; Edwin Herzog, branch manager for the Dime Savings Bank; J. M. Lemew, a druggist, and Dr. E. O. Millay, of Romeo. The capital is fixed at $1,000.

Dodge states that he had no idea of forestalling Dodge Bros., but as he has lived in Detroit all his life and purposes making low-priced cars, he saw no reason why he should not make use of his own name.

ARISTOS TO BUILD CARS AROUND ITS MAGIC MOTOR

Will Produce a Limited Number of "Sixes" in Two Sizes for Custom Trade Only—Chassis to Come from Palmer & Singer.

Having possessed itself of the American manufacturing and selling rights for the Fisher motor, which it has renamed the Magic, the Aristos Co., which is closely allied to the Motor & Gear Improvement Co. of 250 West 54th street, New York City, unexpectedly is about to embark upon the production of a limited number of high grade cars fitted with the engine. The action has been taken as a means to bring the motor forcibly to the attention of manufacturers, who, it is pointed out by an officer of the company, have been lethargic in grasping the opportunities which it represents in the matter of fuel economy and efficiency. The Magic motor differs from others principally in that it has sliding crescent shaped valves instead of the usual poppet members.

For the time being, the Palmer & Singer Mfg. Co. of Long Island City, which now holds the only existing license from the Aristos Co. and which will produce Magic motors for itself, will produce the cars, though it will not produce the motors for the latter company. The cars themselves will be high-grade and comparatively high priced; no attempt will be made to produce in quantities, and only custom work will be sought. The cars, which will be styled Mondex-Magic, will be built in two sizes and both will have six-cylinder motors, the smaller of which will have cylinders measuring 3⅜ x 4¾ and the larger 4 x 5 15/16 inches.

Arizona Car to Move to Michigan.

Holland, Mich., possesses what is known as a bonus committee and, due to its activities, it is probable that an automobile factory may be located in Holland's "midst." At any rate, it is stated that negotiations have been completed for the removal of the Spenny Motor Car Co., from Tucson, Ariz., to Holland, where a former engraving plant on West 24th street has been set aside for its use.

Until it was thus brought into the limelight it was not known that Arizona harbored an automobile manufacturer of any sort or size, but it is stated, nevertheless, that the Spenny company, of which C. A. Spenny is president, and which is capitalized at $500,000, produces the Spenny "six," a $3,500 car, of which three already have been turned out in Arizona.

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STUDY BUYER AS SALES HELP

Value of Knowing the Prospect's Wants and Traits—How Learning About Him and His Family, Business and Life May Ease Way to Sale.

Study the buyer! That has been said again and again. It is a point of such overwhelming importance that it requires repetition and emphasis. It cannot be made too important a portion of a sales campaign.

Too often the thought is given only to the seller's side of the transaction. But, unless the plan is formulated, and carried out with a view to the buyer's requirements it stands little chance of success.

Ascertain Standpoint of Best Appeal.

You are selling an automobile. The buyer wants one. What can he afford to pay? What kind of a car will best harmonize with his means and social position? What are his habits? What will he use his car for chiefly? Is it a genuine necessity for his business? Can you appeal to him from the standpoint of increased business opportunity?

How large is his family? Has he strong social instincts? Would a car with extra seating capacity attract him? Does he appreciate that a few dollars more spent in first cost may save him many times the difference in repairs later? In a word, does the value "in the long run" have any significance for him?

Not Selling the Car, but the Buyer.

What about his wife? Do you know anything about the things that appeal to her? Can you find out? What would the rest of the family prefer?

These and a hundred other questions all bearing on the buyer are worth summarizing—and the answers will prove an amazing help in selling. Remember, as some one has said, "you are not simply selling the car, you are selling the buyer."

PROPER SURROUNDINGS AS AN AID TO SALESMANSHIP

Your salesroom should be properly lighted; it should have a clean floor and neatly tinted walls; it should be a neat and attractive setting for the cars you sell.

A diamond in a pawnshop or second-hand store has just as much color—just as much fire and just as much weight, size and purity as it had in the window of the leading jeweler. But it does not look the same; you would not buy it as confidently; you would not pay as big a price for it; in fact, you probably would not consider its purchase at all, even though you might want a diamond of that exact weight, size and color.

Association and Its Effect on Values.

What makes the difference? It is all in the surroundings, the associations. The value is there in the stone, but the atmosphere breeds suspicion.

Did you ever think how that works in a salesroom? The setting has a remarkably strong influence on the mind of the prospect. Do your cars get a fair show?

The suggestion is not to go to extremes. Have an attractive salesroom—and have it clean. Don't let a bright, new car rest side by side with a second-hand one that has seen better days. It does not pay.

SMILES AND NODS THAT WIN PATRONAGE FOR GARAGES

The business-creating effect of "immediate attention" is a subject that every dealer and garageman can well afford to give careful consideration.

Go into some garages and you are required to wait ten or fifteen minutes before anyone gives any sign of being aware of your presence. Perhaps the employe is busy pumping up a tire or serving oil or otherwise waiting on a customer. But even if he is the only one, as frequently happens, it should not debar him from at once passing a cheerful nod or smile to the new arrival.

Some employes treat the motorist who drives into a garage when they are busy as if he were a gross intruder. The chilling effect freezes any resolution or idea of further business, and the supply sale or adjustment that might lead to far more profitable relations simply becomes a negative advertisement.

Developing Winning Esprit du Corps.

An occasional word to employes showing them how great is the dependence of the institution on their cheerfulness, tact, and politeness towards customers will do much to develop the winning esprit du corps which is such a great factor in any business. Every employe is a salesman—no matter what he does.

TO PRESERVE THE FRESHNESS OF DEALERS' PRINTED MATTER

When printed matter is left flat on the top of a table something is sure to happen to it. Some of the top sheets get fly-specked, some get dust covered and good deal of it is likely to get dog-eared. Thus when you reach for one of those "attractive" circulars or booklets you note that the fresh, clean look that adds value and interest to all things printed, is conspicuous by its absence. The literature that was intended to attract is almost certain to detract—and if the top ones are lifted off each day and thrown away somebody is paying the printer for nothing.

The plan followed by the Neumann-Lane Co., of Detroit, is a good one. When printed matter comes from the factories only a few samples of it—say, half a dozen specimens—are placed on the table in the showroom. The main stock is kept in a sectional bookcase, where it is instantly accessible, easily seen, and protected.

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KEEP DATA AND GOODS HANDY

Place for Everything and Everything in its Place—Value of Neatness and Order —Supplyman Who Has Built Business upon a System.

The most impressive feature of the store of Richard M. Kaough, proprietor of the Fort Wayne Vulcanizing Works, Fort Wayne, Ind., is its neatness and orderliness. That means that Kaough recognizes several of the vital principles of good merchandising—clean windows, clean floors, clean stock. And everything in order.

Kaough Does not Guess—He Knows.

From practically nothing, Kaough in seven years has built up a business to be proud of. It meant slow, hard work, but at every stage of it Kaough's business was in order—externally and internally. Ask Kaough a question about his business and he does not guess—he knows. What are his sales to date? He has the exact figures every day. How much cash has come in during the year? The cash register which records every dollar received—whether across the counter, by mail, or collected personally—tells the story right up to the minute. How much has he outstanding? His records tell this instantly, as they tell everything it is necessary for a merchant to know to guide his business to success.

Knows Costs, Prices and Quantities.

What is the stock of a certain article? How much did he pay for it? When did he get it? How much did he buy—He can tell you instantly. It would take some dealers about a week to get this information. It should be immediately available to have any value.

From which it will be apparent that Kaough looks after the little things. A large part of his business is the sale of tires. These are kept down cellar in a cool, dark place. Everything is as orderly as a factory stockroom. No chance to get mixed up or be uncertain as to what size or how many on hand. The main floor is devoted to accessories and office. The stock is kept in show cases and wall cases except oils in cans, which are on open shelves.

Stopping the Leaks in Wornout Tires.

The second floor houses the vulcanizing plant. The floor is kept clean and the room is light. The third floor contains more stock and two great bins of scrap rubber. This is clean and kept sorted. In many places the scrap rubber shoes left in the shop are disposed of by the "boys" to passing junk dealers. You see the old shoes in greasy piles mixed in with other rubbish. Then you don't see them, for they have disappeared. What became of them? No one knows. In Kaough's shop every scrap tube is weighed and entered in a book and sent upstairs to the bin where it belongs. Once a year this is sold at market rates. It is a by-product that means profit.

There is nothing about Kaough's methods or his records that is not simple and direct. Any dealer can employ the same ideas. Any dealer will find that "it pays to know."

STRIKING INSTANCE OF THE BENEFITS OF SALES ANALYSIS

Did you ever analyze your sales? Or, to put it another way, did you ever analyze your customers?

Say you sold a hundred cars last year—who bought most of them? City people or country folks? What percentage did each buy? To what class did most of the city people belong? What are the opportunities for developing that particular trade? What class did the out-of-town buyers come from? Were they farmers or small town folk? What percentage of each? It pays to know. A little study and analysis might show some exceedingly interesting facts.

Sometimes we get impressions that are at variance with the facts. A certain factory was quite convinced that farmers were taking the bulk of its product. They were sure the western farmer was their best and biggest buyer. Everybody in the factory said so. There was no doubt about it. It was their logical market; therefore the market to be cultivated.

One day an analysis was prepared and they were astonished to find that the eastern trade was giving the West a hard run for volume. Impressions vs. Knowledge. Guess vs. Know. The man who made the analysis remarked: "If I had only known that six months ago it would have made a big difference in our showing."

GRASPING POLICY THAT DID NOT ENHANCE REPUTATION

In northern Ontario a certain dealer had a practical monopoly on the gasolene situation in his vicinity. He put the price up as far as he dared—about 40 cents a gallon and no reduction for quantity. During the first month or so this policy did not interfere with his trade and he made considerable money. But after a while some of the car owners in the vicinity got together and bunched their purchases and sent the order to a point some distance away where prices were more favorable. In the meantime, as contract shipments of gasolene began to arrive for the "near-monopolist," he quickly saw the advisability of fair prices and quotations on the precious fluid came down to normal. No one in the vicinity, however, is praising the dealer for his generosity.

What a pleasing impression is made by the garageman who, after filling up your tank, turns to you and says, "Don't you need some oil?" It is one of the simplest forms of salesmanship and one of the most neglected. The dealers who cultivate this spirit in their employes are sure to find it profitable.

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CENTURY CAR CONTROLLED THROUGH MAGNETIC SYSTEM

Duplex Steering and Speed Regulation by Finger-Lever or Pedal—New Car on Old Lines but Enlarged and Improved.

It needs a good deal more than detail changes, however important, to so alter an automobile that it cannot be readily recognized by those who know the characteristics of the make, for each builder puts into his cars certain individual touches that are not easily rubbed out unless there is a complete change of general design. Therefore, it is quite logical that the latest five-passenger electric brougham of the Century Electric Car Co., of Detroit, should be a typical Century car, despite the improvements that serve to make it more comfortable, more easily controlled and withal more pleasing to the eye. The price has been increased from $2,550 to $3,250.

Perhaps the most striking of the new ideas incorporated in the machine is the duplex control and its details. Not only can the car be steered from either the front or the rear seat—on the left side—but the control of speed and of the brakes can be effected either by hand or by foot, as may be desired. The controller is of the magnetic type, and as the real work of operating the controller is performed by electricity, the driver has only to move a little lever which can be shifted with the thumb and finger while the arm rests comfortably on the upholstering.

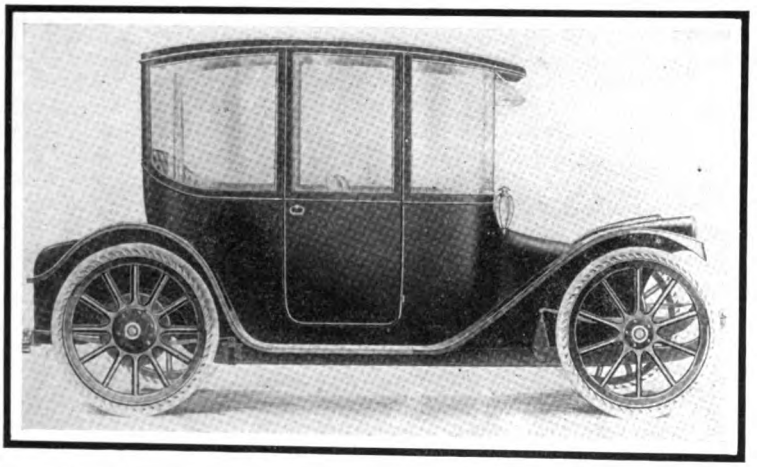
Foot control is vested in a pedal which is pushed forward to reduce speed. After the pedal has been pushed past the lowest speed point it cuts off the current and successively applies a dynamic (electric) brake and a friction brake; allowed to return, the brakes are released, the current turned on and speed increased to the maximum, which is reached with the pedal at the end of its backward swing. There are no resistances to waste current, and the action is smooth and easy, no matter how fast the controls are operated. Incidentally, the steering lever not in use drops to a vertical position, out of the way. The steering shaft turns in imported ball bearings, eliminating wear and looseness.

The whole car is considerably bigger and roomier than its predecessor. As a starting-point the wheelbase has been increased from 98 inches to 104 inches and the body correspondingly lengthened and the stress-resisting parts strengthened. The rear seat is 50 inches wide, which is 3 inches better than before. The seat is 20 inches wide, with cushions 8 inches deep. The two front seats each are 18 inches wide and 19 inches deep. Doors are 26 inches wide, providing an easy entrance.

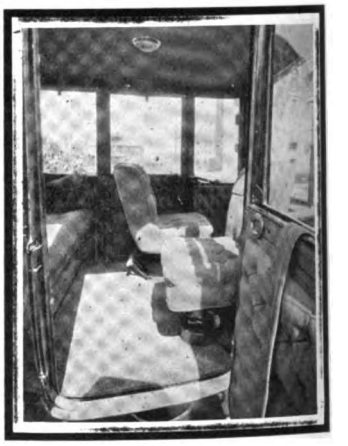
A new item of equipment is the Timken axle outfit; the rear axle is of the full-floating type and the front axle a standard I-beam member instead of the tubular front axle formerly used. The brakes are much larger than formerly, commensurate with the present size of the car, being 15 inches in diameter instead of 12, and 2½ inches wide instead of 1¾ niches; the total braking surface is now about 400 square inches. The front springs are semi-elliptic and the rear springs of the platform type; the frame is underslung in front and at the rear is carried above the axle by means of a high "kick-up" which allows easy access to the axle.

Power is generated by a single motor of 500 per cent. overload capacity carried on a three-point suspension and is transmitted to the rear axle through a direct single reduction drive without chains. Current is supplied by a battery of the high bridge type, requiring no washing out, accessibly housed at front and rear, there being no cells under the seats. All the wiring is protected by conduit and is large enough to carry the heaviest currents the motor can draw without appreciable drop in the voltage and without the slightest tendency to heat up.

The tires, which are Motz notch treads 36 x 4½, are half an inch larger than in the previous model. Needless to state, the equipment of the brougham includes electric lights; the headlights are built into the fenders and the side lights are of special design. Tail light, meter lamp and a cut-glass shaded dome lamp with switch on the door complete the illuminating equipment.



CENTURY FIVE-PASSENGER BROUGHAM SHOWING UNDERSLUNG FRONT



SHOWING SEATING ARRANGEMENT

Other items included in the "fittings" category are Warner speedometer, with Pellam floating drive, rim-wind clock, Klaxet horn, flower vase, toilet set, smoking set, Yale control and door locks and the usual charging plug and outfit of wrenches and other tools.

Has "Lightning Conductor" for Cars.

One of the queerest of the many queer inventions that the automobile has inspired was that of a man who became convinced that much motoring produced a nervous disorder of the human mechanism, and that the immediate cause was electricity generated by the vibration of the car and prevented from escaping by the insulating qualities of the rubber tires. The "invention" comprised a conductor which brought the body of the car into continuous electrical connection with the roadway, thus permitting the escape of the nerve-wrecking currents. Application for a patent was actually made, though it is not of record that the inventor acquired inordinate wealth by the sale of his device.

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"USED CARS" AND SQUARE DEALING WITH PUBLIC

Expert Sums up His Impressions Gained Through Long Experience in The Trade—Making Used Cars an Asset, Not a Burden—Methods Which Undermine the Future and Their Fallacy

By CLARENCE H. HILL, Manager of the Used Car Department, Detroit-Cadillac Motor Car Co. of New York.

It makes some of us who have been identified with the automobile trade for years smile when we hear the expression "used cars," as it is our old friend the second-hand car posing under a new and apparently more inviting name. It would seem to me more appropriate to use the expression "used and abused cars." The automobile trade at large seems to be devoting about all its spare time to the subject of disposing of its own or of its patrons' used or, if you please, abused cars. Expert opinions are sought, papers are read at various trade meetings, trade journals are devoting much space to the subject, salesmen to run used car departments are hired and fired, and when all the flurry and bustle is over, the dealer fortunate enough to have disposed of his used and abused cars by hook or crook pats himself on the back and exclaims, "What a great man am I!" and considers himself a clever business man; but in the majority of instances he is far from it. He has placed what he considers a very objectionable part of his business in the hands of a glib talker whose motto is, "Slip them over and let tomorrow take care of itself," with the result that in his wild desire to turn into profit his used and abused cars, regardless of their future worth, he has sacrificed his most valuable asset—his reputation. The cars have been disposed of regardless of merit and he has rapidly accumulated a lot of dissatisfied customers ever ready to knock him and the car he represents.

What to Do With Citrus Fruit.

In my opinion any dealer representing a reputable manufacturer, with the aid of a good, clean-cut automobile man in charge of his used car department, should find that this department is a valuable asset and not a constant worry. He should consult that department as to the trade-in value and not embarrass it and his business by over-valuation in his desire to sell cars. If the condition of the car justifies putting it in good condition, the work should be done and the dealer should stand back of it; otherwise, the car should be disposed of through other channels known to the trade; a dealer should never saddle a customer with a "lemon." This has been the policy of one of the most prosperous agencies in this city, and some of its strongest supporters are numbered among the purchasers of its used cars.

Relative to the subject, it strikes me that a little dissertation on business-like methods would not be amiss. I am anxious, if possible, to convince you that the selling of used cars is not only an easy problem, but, if properly handled, a profitable business. The average automobile dealer seems to have a mistaken idea as to just what the word business means. He seems to think that it means to get all the money one can in as short a space of time as possible, and allow the other fellow to do the worrying. The definition of business from any good business man's standpoint is the selling of an article of merchandise to the complete and entire satisfaction of the buyer and seller. Any man with a fair amount of brains, of good appearance and a glib tongue can sell an automobile to the satisfaction of a customer at the time, but it requires good business methods permanently to satisfy the customer and the company.

Agents Good and Otherwise.

It would seem appropriate to quote a trade slogan made famous by John Simmons of the Simmons Hardware Co. of St. Louis: "The recollection of quality remains long after the price has been forgotten"; and it would be well for every automobile dealer to have this before him, not only when he negotiates for a manufacturer's product, but when he actually disposes of that product.

I firmly believe that the chief trouble in the automobile business is in the radical departure made by many of our automobile manufacturers in the selection of agents, as compared with the old-time methods rigidly adhered to by prominent manufacturers in other lines who invariably place their products in the hands of reliable representatives. Many excellent automobiles have been placed upon the American market, designed by capable men, assembled and tested by expert mechanics, but delivered to agents whose mercenary and unbusiness-like methods have done much to embarrass the manufacturer in the eyes of the purchasing public. Consequently, I believe that I am not far wrong when I dwell particularly on the word business as being, I think, the keynote that will not only bring the used car problem out of the mysterious haze, but will bring the automobile industry generally up to a standard where honest manufacturers are striving daily to establish it.

Throwing Light on a Failure.

As an apt illustration, in the year 1905 there arrived in this city two men, whose style and physique reflected their characteristics. One was crude and of no executive ability, but gifted along mechanical lines. The other was the dominating spirit, overloaded with self-confidence, clever, shrewd and a man with the get-rich-quick fever running in his veins. These two men managed to scrape together about $5,000 in cash and started what was known then as the game, which in this instance was the manufacture of automobiles. In 1905 their sales were less than 400; in 1906, about 4,000; in 1907, about 40,000; and, based on that enormous production, one of the largest industrial combinations of its kind in the world was formed. A great splurge was made, but there is no need of going into the details; everyone heard the crash; something like $10,000,000 lost; and the amusing part of it was that one of our New York dailies in printing their obituary dwelt to great length on the condition of the stock market, the inability to obtain funds owing to the stringency of the money market, etc.; and near the end the obituary stated: "The probable cause of the failure of this company was the poor handling of the used car department, as the inventory shows about $200,000 worth of second-hand cars on hand." I predicted their failure in 1909. My predictions were based on the manner in which they were doing business. They were violating the laws of compensation. In other words, they were asking the public to do what they would not do themselves, and, sooner than they expected, the crash came.

This company, as well as several other automobile manufacturers, in response to the demand for four-cylinder cars, turned out in 1906 a four-cylinder model which they

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knew was not a success; but, nevertheless, they marketed 35 of these cars when any good business man would have consigned them to the junk heap rather than jeopardize his business reputation by having these cars in the hands of his customers. While the company no doubt felt it was riding on such a high wave of prosperity that the 35 failures would soon be forgotten, they were not. Shortly after that the company accepted in trade one of these failures in an effort to satisfy a customer. They proceeded to dispose of this turned-in failure, and were successful in selling it to an unsophisticated purchaser and felt very much elated; and I have no doubt when the unfortunate man drove the car out of their salesroom he was laughed at as an "easy mark." To record the troubles this purchaser had with the car would prove boring, so it is sufficient to state that it cost him $800 for 800 miles of service. This expense included the replacing of five flywheels.

Making Good When Cars Went Wrong.

In the course of business I met this unfortunate purchaser, and he talked with me on the subject of suing the company, saying that he had good grounds for suit, and that he had conferred with several experienced lawyers; but I advised him not to do anything until I looked into the matter. My reason for giving him this advice was based on the experience of another company with which I was familiar. This company had turned out a model that did not come up to its standard; but unfortunately, before stopping deliveries, about 12 of these cars were in customers' hands. The company at once notified these owners that they would exchange the cars for other models at no cost, and, in fact, made exchanges for every car delivered. In one instance they were a matter of nearly two years in locating one of these models, but even then they furnished the owner with a new model.

In consequence, I took it upon myself to interview one of the officials of the company first spoken of, not that I thought I had any influence, but because I thought I could appeal to his business sense and convince him that his customer had every reason to expect fair treatment. I called at the magnificent offices of this large motor company, and after a long wait was ushered into a sumptuous office and found myself in the presence of the Grand Mogul. I stated my case with scant courtesy, and virtually was told that it was none of my business. Evidently the ethics of the case, so far as his company was concerned, he considered a joke.

It was not more than six months after that the company failed. In my estimation it would be hard to find a better illustration of the disastrous effect of ignoring good business methods and resorting to get-rich-quick methods. So far as the used car problem is concerned, handle it in a business-like manner, play the game fairly, and you will not have nearly the problem you imagine.

Used Car Plan Aptly Illustrated.

In the matter of the value of used cars—that is, the valuation as the dealer sees it and not as the customer sees it: In the first place, never blame a customer for asking the highest price for his used car. Blame yourself if you pay more than it is worth. Do not get discouraged if you have to turn down three out of five new car orders on account of the dissatisfaction in price for the prospect's used car. In the first place, a good plan to follow is to specialize on the car or cars you are representing, and not to accept other makes in trade. Stick to one line, both in new and used cars, and do not be governed by your competitor's price or by what the customer says he can get. For example: Assume that you are selling exclusively the Jones car; that you have been handling this car for several years and that it is popular and well-constructed; that your customer is interested in the 1914 model and that he owns a 1912 model. The demand for a 1912 used car does not justify you in allowing more than $800 in trade. The customer is dissatisfied and informs you that the agent for the Smith car has offered him $1,000 in trade. It is not necessary to go into details with your customer, except to inform him that if you could afford to allow him $1,000 for the car you would have told him so in the first place. Allow the man just what the car is worth as a business proposition, and not one penny more.

Every Used Car Buyer Made a Friend.

Overhaul the car and put it in good condition before disposing of it. You will find that you can invariably do this at a cost that will permit your disposing of the car for an amount equal to, if not less than, the amount of $1,000 allowed by Mr. Smith. On the other hand, if Smith disposes of the car for just what he has allowed, he will create a dissatisfied customer; or, if he attempts to overhaul it he would only be able to get the market price—which we will say in this instance is $1,000—and in disposing of the car will do so at a loss.

I have been following along these lines for the past six years, during which time I have sold only one make of car. In the past season I have sold over 300 used cars, and I believe I can honestly state that I have made a friend of every customer. I attribute my success—if I may be allowed to call it success—to the fact that the head of the company with which I am affiliated is in strict accordance with my ideas relative to the used car problem.

Lower Freight Rates in Western Territory.

After November 1st the rate on automobile tire chains in barrels or boxes in Western Classification territory will be reduced from first class, less than carload, to second class. Wind shield frames, less than carloads, will also be reduced from double first class to first class rates. Tractor attachments for automobiles, loose small parts in boxes, and trunk racks in boxes or crates on which no specific rating now exists, will bear first class rate, while automobile tire carrying cases in boxes or crates will be charged double first class.

Want Salesman to Repay Expense Money.

Edward J. and Leo A. Brigel, who operate in Cincinnati, Ohio, as the Selden Auto Agency, advanced some expense money once upon a time to James A. Duchemin, a salesman, so they claim, and now they want it back; until Potash and Perlmutter of Georgemcohan-Montagueglass fame, they are unwilling to let the money go and have filed suit against Duchemin in the Court of Common Pleas in that city for $762.50.

Haynes Manager Starts on Trade Swing.

A. G. Seiberling, general manager of the Haynes Automobile Co., is due to leave the factory in Kokomo, Ind., for a swing around the entire trade circle. This means, of course, that he will go as far as the Pacific Coast. Incidentally, it is announced that the Haynes output for 1914 has been entirely contracted for by dealers.

Case Takes Over Alco Salesrooms.

The two-story building at Broadway and West 62d street, New York City, formerly occupied by the automobile sales department of the American Locomotive Co., has been taken over by the J. I. Case T. M. Co., of Racine, Wis. The building affords 20,000 feet of floor space and will be occupied by the Case New York branch.

Pennsylvania Buys into Hatfield Truck.

W. C. Riley, president of the Valley Iron Works, of Williamsport, Pa., has acquired a large interest in the Hatfield Co., which manufactures the Hatfield truck in Elmira, N. Y. Reports that the factory will be removed from Elmira to Williamsport are, however, denied.

Head of Lozier Company Off for Paris.

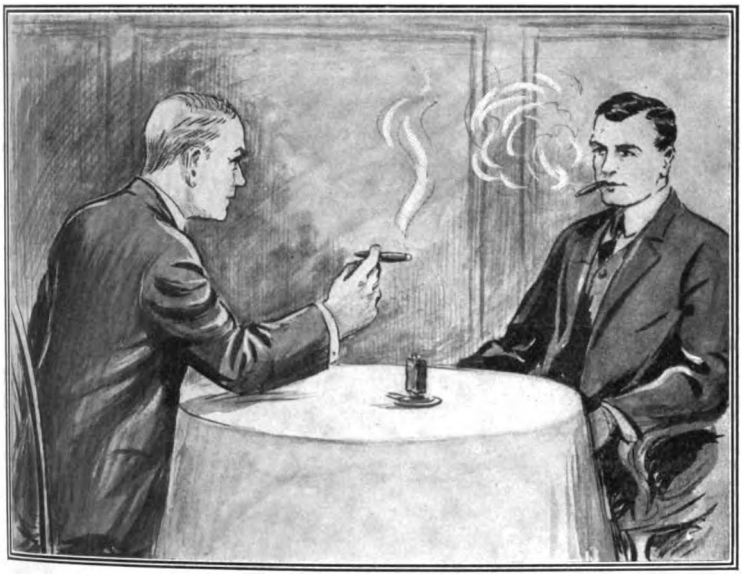
Harry A. Lozier, president of the Lozier Motor Co., sailed to Paris this week. He will be absent for a month or more.

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AIDING SALESMEN ON PATHWAY TO EFFICIENCY

Put Uplift Reading Where it Is Within Their Reach That They May Gather Inspiration—Reilly Convinces a Doubting Tradesman of the Value of Books and Trade Papers to Salesman and Dealer, Too.

In their favorite corner at Pierre's, Reilly and Ben Doyno sought comfortable places for their feet under the table and, straightening back in their chairs, fished cigars from their vest pockets; Reilly's was long and black and Doyno's was long, too, but it was less corpulent and more on the



"IT'S A QUESTION OF EDUCATING YOUR SALES FORCE," WENT ON REILLY

octoroon style. Frank, who was a truly good waiter, knew this was the psychological moment and dexterously brushed off the table top, snatched up the few remaining dishes and set down a couple of ash trays.

Reilly and the Psychological Moment.

Doyno, who was one of the town's successful supply men, did not know Tommy Trumbull, and Reilly sat so he couldn't see him. Tommy had graduated from college June with the determination to be a salesman and, since he couldn't land in Reilly's salesroom or get anything else that he thought was what he wanted, had started out on a free lance expedition of his own. He hadn't been a salesman long, but he knew Reilly and also knew this was the psychological moment for him.

As Tommy out of the tail of his eye saw Reilly spread the first satisfying cloud, the youth arose from his nearby table and walked over to the two tradesmen.

"Well, well! Hello, Tommy!" greeted Reilly. "What are you doing these days? Haven't seen you in a long time."

For answer Tommy reached inside his coat where a concealed black bag hung over his sholuder, drew out a thin, gray book and laid it on the table. He said nothing.

"Pretty clever! Pretty clever!" exclaimed Reilly as he pulled back Tommy's coat and peered at the hidden bag which enabled a book agent to look like a perfectly respectable citizen.

"Sales—and Their Making," was what Reilly read on the cover of the book as Tommy still stood beside him in silence. Reilly looked inside, turning critically through the attractively compiled pages of the prospectus. What he saw told him what the book was, and Tommy knew this would make more impression upon Reilly than a rod of verbal argument.

Doyno Declines to Invest in Ideas.

Just as Reilly was glancing over the last few pages Tommy laconically said, "Two dollars. Deliver in two weeks." For answer Reilly drew forth $2. Tommy handed the prospectus to Doyno, who laughed, "I'll let Reilly read it and then listen to him tell about it. That'll save me $2."

Tommy laughed, too, and walked out.

"Looks like a good book, Ben," commented Reilly.

"There are millions of good books; I can't buy them all," was Doyno's response. "Also, two dollars is sixteen bits, and bits don't grow on bushes."

"May be." Reilly shrugged his shoulders.

"What are you going to do with it after you get?" challenged Doyno.

"Do with it? What do you generally do with a book?"

Attic not the Place for Such Property.

"That sort of bunk you generally put in the attic."

"You do! Well, I don't. I'll read it and my salesman will read it. You may be a good enough salesman or businessman, but I don't think it would hurt you to have some stuff like that around your place for——"

"To amuse the salesmen?" interrupted Doyno.

"You're like a lot more," retorted Reilly. "You can't see any good in such stuff. If you could buy for $50 a display window idea that would give your store a good boost, would you buy it?"

"Certainly, I would!"

"If one of your men or yourself could get it for $2 would you consider it a good investment?"

"Certainly."

"Why, then, do you stick up your nose at a book that is full of ideas, any one of which might be worth to you many times the value of the book?"

"A-a-g-h!" grunted Doyno, "it sounds well."

Supplyman Undervalues Ideas' Source.

"That's the trouble with a lot of you fellows," continued Reilly. "You persist in walking all over the things that would be valuable in your business and can't see them or pick them up because you're stepping on them. That book is worth many times what it costs if it is used right. But you've got into a rut of prejudice, and just because a book agent came along with it you won't even look at it."

"I hate the sight of a book agent."

"The book agent part doesn't loom up strong at all in this matter. He hasn't anything to do with it," went on Reilly, who

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was leaning forward with the hot end of his cigar pointed at the passive and unperturbed Doyno. "It applies in more ways than one; it's a question of educating your sales force and giving them a chance to get ideas that may be valuable in your business, and you sceptical individuals are turning opportunity down cold at this point. It is impossible to estimate the value of the right kind of literature when placed in the hands of clerks and salesmen; maybe you don't realize that every time one of your salesmen betters himself a little he is benefitting you directly, but he is."

"Haven't your salesmen anything to do but read books?"

Why Spare Time is not Easily Avoided.

"Yes, they have! Sometimes and sometimes not," returned Reilly. "There isn't a salesroom in this or any other town where there aren't times when salesmen have idle time on their hands. They may not so classify the moments when they are sitting on floor duty waiting for someone to come in or just waiting for something to fall into their laps; but there isn't a salesman who doesn't have some spare time even when he is on duty. I know that my salesman often has times when he isn't overworked. It is no discredit to him, either; it has to be.

"Now, supposing that book I just bought is lying around the office—as it will be when I get it—and the salesman picks it up some day and looks it over. He is very likely to run across a selling idea that never came to him before, and if he puts it into practice isn't that one idea worth $2?"

"Yes, Reilly, that's all right, but how much is there in that book that you don't know this minute?"

Dormant Ideas Bad as None at All.

"For the sake of argument we will say I know it all. We may also concede that the salesman knows all there is in it, too, but how many ideas are there which are not exactly new with a man but which have merely been allowed to shuffle back into the attic of his brain and which, therefore, are the same as something he never knew at all? This sort of reading, Doyno, is valuable in more ways than one. The habit of reading this efficiency and uplift stuff arouses many dormant ideas that have been lost in a man's mental storehouse.

"You can see how that is yourself. Suppose you note down a good idea every time it occurs to you, which is a very good plan. But suppose that you file all these ideas away in a drawer or a book and don't look at the book; what good are the ideas? But —suppose you take out the collection and thumb it over every so often; doesn't that make those ideas a quick asset, something that has a real value? And what's the difference between that and reading business and efficiency literature? You may have known it all beforehand, but it wakes you up and buys back forgotten ideas."

"There's some sense to that argument, Reilly."

"And, lest you think I am in favor of buying a stack of books for the use of the sales force, let me make this an opportunity for saying that there are other things than books. There are efficiency magazines and dealers' trade papers. All of these things have some good in them.

"Furthermore," asserted Reilly with emphasis, "it's good policy to push these things under the noses of your salesmen, to leave such books and trade papers lying



"YOU MAY STAY FOREVAIRE!" EFFERVESCED THE FRENCH PROPRIETOR

around where they can't help but see them. Don't give them a chance to say they never get a chance to get hold of them. This has two distinct benefits for the dealer or any other employer of salesmen. It gives the dealer a line on who of his salesmen are the best men and the most interested in the business. The interested man will read such things; he is hungry for them, for he knows they will increase his efficiency. It gives the dealer a basis for weeding out the men who are the least valuable and for developing the men who show the greatest promise. It's a sure criterion.

How Reilly's Plan Helps the Dealer.

"Also, assuming that it shows who the interested men are, it also helps the dealer's business in making his good men better. The interested salesman ought to show results and this one little plan can be made the means of building up a selling system of greatest efficiency. If I had to choose between two men I would pick the man who read his trade papers every time. I would have no hesitation in doing so.

"The situation was brought home to me some months ago when two copies of a trade paper come into the office one morning. One was addressed to the salesman. I asked him about it, and he said he wanted one to read and that I had always taken mine home before he got a chance at it. He said there was good stuff in it for any man in the trade and that he thought there was just as much in it for him as for me. He also said he thought that when all things were considered he needed to read it much more than I did. I think he was right, too. He has been in the selling business a shorter time than I have and is working on a salary and has farther to go than I have before he gets where he wants to be.

Floor Plan from Efficiency Reading.

"My salesman is eager to read that kind of stuff, and the results have been apparent on more than one occasion. I don't remember just where he unearthed it, but he is responsible for a scheme of floor arrangement for cars that has proved especially attractive and effective. I remember he told me at the time that he read something of the principles of window arrangement and lighting in something or other and that gave him the germ of the idea which he proceeded to work out for application to our salesroom.

"I had always realized that the job could be better done in some way, but I never found anything that seemed to be just what I felt could be accomplished. But he figured it out. That is but one instance in which the use of this sort of reading by a salesman has been productive of good results. Had he not read it, we might never have become possessed of the display scheme. How much did that cost us and how much is it worth? Come on, now; how much?"

Hard to Place Value on the Result.

"That's hard to tell, Reilly. It's worth a great deal."

"If the book I have bought can do a fraction of that amount of good isn't it worth two dollars?"

"Probably it is."

"How many two dollars do you let dribble through your fingers with never a thought? Yet when a man asks you point blank to spend that amount of money the matter assumes entirely different proportions and you at once develop an economical streak."

"For economy I would suggest that we get out before Pierre charges us rent for this place," commented Doyno. "Eh, Pierre?" to the proprietor who was passing in his hurried French way.

"You may stay forevaire!" effervesced Pierre, whose little round mouth and uppointed moustache looked for all the world like an old spread eagle flying away with a young doughnut. But Reilly and Doyno went.

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ACCESSIBILITY FEATURED IN WORM-DRIVEN LIPPARD TRUCK

Everything Easily Get-at-able in New Model Rated at One and One-Half Tons Capacity—Unusual Propeller Shaft Construction.

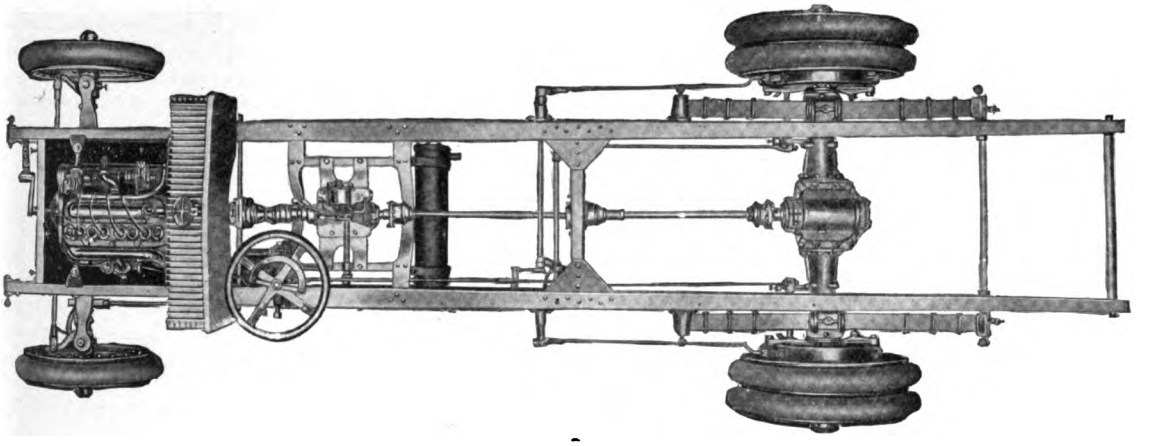
Departing by a considerable margin from previous practice in some respects, most important of which is the adoption of worm drive, though still retaining a great many of the distinctive features of its older, 1,500-pound delivery wagon, the Lippard-Stewart Motor Car Co., of Buffalo, N. Y., has in its latest model, which is rated at 1½ tons capacity, given ample evidence of well-laid plans for the maximum of accessibility; the list price of the new model chassis is $2,300 and bodies to suit the individual requirements of the purchaser are quoted separately.

As is customary in a great many of the lighter commercial vehicles, the motor in the new model is placed forward of the driver's seat under a sloping hood where it is instantly accessible for adjustment or the replenishment of oil. Furthermore, each unit in the chassis is independent of the others and can be removed without disturbing them. Due to the clean design of the engine, the magneto and the carburetter are readily detachable and within easy reach; both the clutch and the gearset are accessible through floorboards and either can be taken out bodily without removing the other. The underpan is held in place by means of a clamp and wing nut and, when necessary, can be loosened and pulled forward along the frame so that the lower half of the crankcase is exposed; when the pan is detached, the bearings are within easy reach. Throughout the car, oiling devices are used liberally; the spring bolts are lubricated by means of cups and wicks; the clutch shaft and brake counter-shaft are lubricated by liberal sized grease cups which are placed outside the frame, making it unnecessary to take up floorboards or to creep beneath the car to give them the necessary half turn at intervals.

In the construction of the car cognizance has been taken of the necessity for providing ample power, but so that the power cannot be used to disadvantage a centrifugal governor on the motor holds the speed of the vehicle normal. The motor itself is a Continental, which is as good as stating that it has L-head cylinders cast in a block and that the oiling system for which all Continental motors are known is used. Under this system, the oil is forced by two plunger pumps through copper tubes to the main engine bearings and also to the timing gear train. The bore and stroke of the engine cylinders are 4⅛ inches and 5½ inches, and it delivers its rated 35 horsepower at 1,200 revolutions. For ignition, an Eiseman high-tension magneto is employed and so that the driver cannot experiment with the spark advance, there is no advance lever; the ignition is set for a point predetermined by the makers. The carburetter is a Rayfield with a dash attachment to the needle valve for altering the proportions of the mixture according to the requirements of the motor.

For cooling, Lippard-Stewart engineers have adopted the built-up type of radiator as being susceptible of quicker and easier repair than any other type. The water tanks are of cast aluminum, the upper one having cooling flanges cast on it to assist in the radiation of heat. The tubes are fitted into the tanks in such a way that either of two groups can be withdrawn without disturbing the other. Water is circulated by means of a centrifugal pump and a draught is induced through the radiator by blades cast on the periphery of the engine flywheel.

By way of discouraging wear due to hard usage, the clutch and transmission elements have been made unusually rugged, the gearset, for instance, being calculated to transmit 50 horsepower easily. The clutch is a pressed steel, leather-faced cone and the gearset, which bears the Brown-Lipe nameplate, provides three forward speeds and reverse, selectively obtained; the gears have one-inch faces and the shafts are mounted in Timken bearings. Instead of being continuous, the propeller shaft is divided into two sections, the object being to obviate the possibility of whipping. The forward section terminates in a substantial self-adjusting ball bearing carried on a frame cross member. Under normal load, the drive is transmitted in a straight line and when light, the slight angularity of the shafts is compensated for by Spicer universal joints, one of which is placed immediately behind the gearset and one at each end of the rear half of the propeller shaft.



TOP VIEW LIPPARD-STEWART 1½-TON CHASSIS SHOWING WORM DRIVEN REAR AXLE

The axles, it scarcely is necessary to point out, are both of Timken manufacture, the front member being the customary heavy-duty I-beam section reinforced to rectangular section at its center. Wheels and steering knuckles are mounted in Timken bearings, of course. The rear axle, which is of the full-floating type, is encased in a cast steel differential housing which is bolted to two tubular members and strongly ribbed throughout. The worm drive is a David Brown with the worm above the wheel, the former being of bronze and the latter of steel. Timken roller bearings are used throughout and particular attention has been paid the necessity for copious and constant lubrication of the worm parts. Cleaning holes are provided to allow of the housing being flushed out at regular intervals. Both sets of brakes are located on rear wheel drums measuring 17 inches in diameter and 2¾ inches across the face.

The frame of the truck is so arranged that

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bodies of from 10 to 12 feet in length can be mounted without overhang and the optional wheelbase lengths of 145 and 158 inches make it possible to secure a load distribution of 30 per cent. on the front wheels and 70 per cent. on the rear wheels. At the point where the greatest strain comes, the channel section is 6 1/16 inches x 4¼ inches wide, ¼-inch alloy steel being used in both side and cross members. By means of a special hinge connection to the side channels, the front cross member is made detachable so that the motor can be readily removed and slid onto two skids placed in front of the chassis. Two other cross members, placed fore and aft of the gearset, act as supports for this unit. A fourth frame member, attached by heavy gusset plates, is located nearly in the middle of the chassis and a tubular tie rod extends across the frame at the extreme end. In front of the radiator the frame is in-swept to permit of a small turning radius.

Demonstrating Electric for Touring Use.

The electric pleasure car is rapidly being developed to a point where it can be used for touring at speeds that are as high as are reasonable and with very little loss of time for charging the battery, and an indication of the fact is the run recently made by a Bailey roadster with a 60-cell Edison battery—a stock model with 10,700 miles to its credit. E. W. M. Bailey, who drove the car, made no attempt to cover a long distance on a single charge, as it was unnecessary and, besides, is not considered to be good practice.

The run was significant, however, in that 258 miles were covered on the route from Boston to Burlington, Vt., in less than 24 hours and in a total running time of 13 hours 35 minutes, giving an average speed of 19 miles an hour—no mean gait even for a gasolene car. Some of the roads were in bad shape, and there were many stiff hills. One feature of the trip was that the battery did not get a full charge en route, but was "boosted" at five intermediate points; the Edison battery permitted much saving of time by standing, without injury, charging rates that reached a maximum of 150 ampere-hours, the normal rate being 37.5 ampere-hours. Battery charging at four times the normal rate is not so very far behind taking on gasolene in point of time, all things considered.

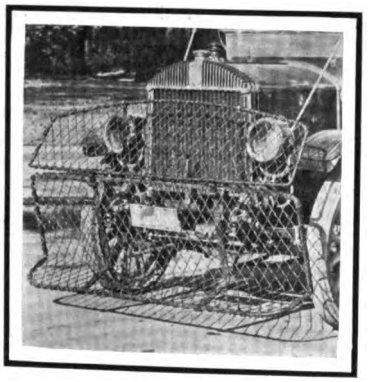
College Inaugurates Sales Course.

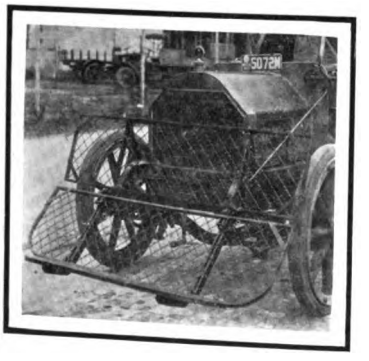
A course in retail selling has been inaugurated for the coming season by the Extension Division of the University of Minnesota; the sessions will be held in Minneapolis and St. Paul. Recognized leaders in all branches of the retail sales field will contribute to the curriculum.

DETROIT THE FIRST CITY TO INSIST ON FENDERS

Chicago Shows Signs of Following Suit —Detroit Officials Approve Several Types of "Life-Savers"— Fender Inventors Joyful.

Away back in the early history of the automobile, probably when there were no more than a few dozen machines trying to shove themselves along the roads, someone invented the first "life-saving fender" for motor cars, and ever since there have been innumerable genuises keeping up the good work and conceiving fenders of every imaginable shape and sort. Until this year their chances of working up a business in the selling of fenders have been poor, to say the least, for there are few who would care to decorate their machines with fenders, if they had their own way, even if the appliances were presented free, gratis and for nothing and applied to the machines without cost.







THREE TYPES OF APPROVED FENDERS

The city of Detroit, however, has come to the aid of this persevering class of inventors by ordaining that all commercial vehicles within its confines must be equipped with fenders, and there is still further hope in the fact that Chicago is considering the adoption of a similar regulation. While the owners of trucks and delivery cars cannot be said to be particularly enthusiastic, those who do business in Detroit are bestirring themselves, for they must build front porches on their cars, so to speak, or else suffer the prescribed penalty. And all fenders must be of such types as are approved and passed by the city officials charged with the enforcement of the new regulation.

At first there was much comment concerning the fact that no inkling was given as to what kind of a fender would suit the powers that be, or, for that matter, as to what fenders could be had; but the situation has been somewhat relieved by the examination and approval of several types of fenders, three of which are shown in the accompanying illustrations. One important condition is that the front bar of the fender shall not be more than 6 inches from the ground when the truck is being operated on the street—a condition that is not quite as simple as it sounds.

New Law Requires Rest for New Yorkers.

Employers in New York State who require their workmen to labor more than six days per week must now resort to considerable red tape to keep their skirts clear of the one-day's-rest-in-seven law which went into effect on October 1st. The law is designed particularly to affect workmen in shops and mills, one of the several classes of labor to which it does not apply being chauffeurs, according to the interpretation that just has been rendered by the Attorney-General.

One provision of the new law specifies that before an employer may operate on Sunday he must post a list of employes designating the day of rest for each, and file a copy thereof with the State Commissioner of Labor. Each employe also must keep a time book, showing, among other things, the number of hours he works on each day.

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ADMITTING THAT PROSPECT HAS INTELLIGENCE

Too Emphatic Assertions by Salesmen May Be Unfavorably Regarded by Buyer—Dealer Who Says, "Prospect Will Use Own Judgment, Anyway, so Why Not Turn This Into a Selling Point?"

Assuming that a man has started in on a "shoestring" and has amassed money enough to own a high-grade car and has built up a business of which he is the head, he is naturally expected to have some intelligence.

Should a man attain average eminence in the law or any other profession, or should he be just an ordinary human being who has to date escaped incarceration in an institution for those of unsound mind, it may be assumed that he is not entirely devoid of intelligence.

Why Conceal Fact from the Prospect?

Having established this premise, Glenn A. Tisdale, who heads the Franklin Motor Car Co., of New York City, says: "Then why attempt to conceal the fact from the prospect? Why not admit that he has intelligence?"

The average salesman, at this remark, may scratch his head and wonder when he ever said that the prospective buyer of a car was less intelligent than the man who was trying to sell it. He may not be able to recall a single instance, but Tisdale is able to recall numerous instances of how conceding that the prospect knows at least a few things in the way of general knowledge has helped make sales.

To go further in explanation, it may be stated that the denial of intelligence in a prospect is not an abrupt assertion of "I know more than you do," or "You don't know anything," but is best described as an attitude on the part of many salesmen which may easily be interpreted by the prospect and resolved into an expression of the prospect's inferior knowledge.

Too much assertiveness on the part of the salesman is directly the cause of the practice which this dealer seeks to avoid, and the logic of the contrary method is explained by the statement that the prospect should be convinced that a car is "right," not bullied into buying it because the salesman declares that it is "right" and does not even admit that there is any argument to the contrary.

"I believe that that one thing has helped influence as many of my sales as has anything else," said Tisdale. "I don't pretend to be a top-notch salesman; in fact, I'm learning every day, and there's a whole lot that I have to learn yet. But I do make a sale now and then, and I can look back to many of them and see where and how the admission that the buyer had intelligence and knew more about what he wanted than I knew, has helped get the order. I believe one of the greatest things in selling cars is to be frank with the buyer and make him believe you are frank and honest with him; if you do that you cannot help but admit that he knows something about the subject, for down in the bottom of his heart every salesman knows it is true.

Buyer Generally Knows What He Wants.

"When a man is in the market for a car he generally has an idea of what he wants and is better posted on that point than I am; wherefore, why should I rise and declare to him that he doesn't know what he wants, that I do know what he wants, and that I have the very thing he wants? If he has any brains at all—and most men who buy cars have some—he immediately becomes prejudiced against what I have to sell. I have given him no honest arguments, but have merely asserted that such things are so-and-so and must be so because I said so.

"But if I can lead him through what I have to say, admit that he is right in his views, that he knows what he wants and then make what I have fit in with the mind picture he has of a car, or so change his mind picture that it fits the car, he is more likely to buy, I believe, than if I try to tear down his mind picture and reconstruct it against his will. And above all things I try to be frank and honest.

When Concession by Salesman Won Out.

"One sale in particular was made in this way. We may as well call the man Smith. Smith came to me and asked about a car, and I told him something about what I could do for him, but he was a man with an assertive disposition and he wouldn't for a minute stand being flatly contradicted. Had I taken him around the floor and insisted that I had what he wantetd he probably would have made up his mind firmly that I was wrong and he might never have come back.

"But he revealed his disposition and I went over to his side of the argument, and, truthfully, too, admitted that he knew much better than I did what he wanted. I told him he probably would be satisfied with one of our cars after he had given it a tryout, but I said, 'Now, see here, Smith, you know better than I do what you want. I'll tell you what you do. You look around a little and come back and let me know how you come out. Then I'll show you what I've got, and if by then you haven't found what you want I'll take my car and I'll go with you and help you find what you want if we have to hunt a week.' This sort of proposal appealed to Smith, and he at once evinced an interest in our cars. The interest became so keen that he parted with good money for one and he never has regretted it.

"Another man came in one day to get an

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and down the 'Row,' that was plain to be seen. I knew that if I told him about what we had he would merely file it away in his mental card index along with the other information he was collecting, and I doubted much if he would consent to a request that he take a demonstration. I told him as I had Smith, 'Talking won't show you what the car can do and doesn't mean much to you. You know what you want better than I do. I would suggest that you take a ride in a car, see exactly what it will do, and if you don't want it I don't want you to have it. Unless you really want one of our cars I would rather not sell it to you.'

"Shopper" Who "Shopped" No Further.

"He consented to go for a ride, and the demonstration convinced him that the car was satisfactory. It was more effective than a week's talking would have been. When he came back he was ready to buy and left his order. It may sound inconsistent, but I really meant what I said. If a man doesn't want our car I don't want him to have it. There is nothing that I regard as so damaging to a dealer's business as to have a car in the service of a man who bought it against his will and best judgment. Of course, the dealer's business is to make him want it—not sign the order, but want the car.

"When the company recently decided to drop right-hand drive, adopt left-hand drive and build one chassis only, it left me with several cars on my hands at the time the announcement came out. A prospect was in my store looking at one of the last series right-hand cars and was quite favorably impressed with it. I couldn't conscientiously sell him that car without saying something about the new series left-hand cars which was coming.

Fairness in Meeting Change of Series.

"I explained the whole situation as it stood and told him all the advantages I knew of for right-hand drive. Then I said, 'Now, you may not like a right-hand drive. A little later we are going to have some left-hand driven cars. I never have driven a left-hand drive'—which was a perfectly true statement—'and cannot tell you as much about it as I can about a right-hand drive. I really don't know which I like the best.' But before this I had enumerated all of the advantages of right-hand drive, and they were fresh in his mind. The man seemed impressed by the fairness of my statements. Also, he wanted his car as soon as he could get it, and he said he didn't think he cared which drive he had. By honestly presenting the right-hand driven car and then submitting the proposition to his own judgment with the statement that he knew what he wanted and would have to make the decision himself, he was helped to decide the way I wanted him to.

"There were two ways out in that sale. I could have sold him the right-hand driven car without saying anything about the new left drives, or I could have done the way I did. I don't think the former way would have been fair to either of us.

Truth Best in Cases of Follow-up.

"Maybe it's similar to telling the prospect he can have his own way in the sale, which is not bad, in my estimation. When a man comes into the salesroom I at some time hand him my card and generally he will offer me his in exchange. Sometimes we ask a man if he doesn't want to leave his name with us, and, in either case, the prospect often says he doesn't want to do so because he doesn't want a salesman to annoy him. In every case, however, we make plain to the prospect that unless he gives us permission to see him no one will go near him; and we always keep that promise. If a man does leave his name with the understanding that he is to be seen only upon the arrival of some model in which he is interested and which was not on the floor at the time he called, we endeavor to respect his wishes.

Lead, Not Push, Prospect Over Line.

"At all times we endeavor to impress upon the prospect that we are anxious to please him in every way. We leave it to him as to whether he wants the car, but that doesn't prevent us showing up the advantages of our line. If we make a strong presentation of our product and then leave it to his judgment, he is more likely to buy then if we make the presentation and then try to push him over the line. What's the difference? There's nothing lost. No matter which way it comes out, nine out of ten —or maybe a larger percentage—will use their own judgment anyway, so why not let them know you know it and make that a selling point? In fact, that appeals to me as one of the best ways of leading—not pushing—the average prospect over the selling line."

Apropos of the sale in which Tisdale had said he would take his car and help the prospect find what he wanted, the Motor World man asked, "But would you have done that?"

Giving Ring of Truth to the Story.

"Certainly I would!" shot back Tisdale. "I said I would and I would—but I didn't have to. I don't believe in telling a prospect things that aren't true. If there are things in your selling talk which you wish the prospect to accept without a detailed idea of what we had. He was shopping up array of proof, he is much more likely to believe those things if he finds you are square with him in other things. Frankness is a big asset in making your story ring true.

"When a salesman makes statements to a prospect and is very assertive, the prospect often takes them with a grain of salt because of the salesman's cock-sureness. The story does not ring true. It sounds too much as if the salesman were trying to sell the prospect something. Apt expressions and catchy phrases may make a fine selling story and many a salesman is congratulated upon the fine selling talk he can give, but I would rather not have a prospect tell me I'm a fine salesman; I'd rather that he show his appreciation of my ability with a check. Anyway, if he did tell me, I would take it with a grain of salt. It would strike me as one of those over-assertive statements that don't ring true. I think I'd ask him to produce strong evidence on that point."

Jap Automobile School for Japanese.

What is said to be the only school of automobile instruction in the United States operated by Japanese for Japanese is that conducted by John Oguchi and L. C. Hufford, at 514 West 16th street, Los Angeles. It formerly was operated by A. W. Yaw, but Oguchi and Hufford bought him out, and while they cater especially to their own countrymen they do not exclude Americans from the institution.

The course of study includes the principles of mechanical engineering, making and repairing of all makes of cars, the making of all parts, and all practical instruction necessary to the proper understanding of the modern automobile. Lectures are given in both English and Japanese in these subjects and the study of English for the non-English students is part of the curriculum. About 200 pupils have been turned out during the existence of the school, the greater part of these in the two years since the present management has had charge of the project.

May Have to Letter St. Louis Cars.

Even thought the city ordinances require that all cars owned by the city of St. Louis shall bear upon their sides letters stating to what department they belong, the city officials apparently are much like other motorists in not wishing to disfigure the bodies of the cars in this manner. Attention has been called to the fact that as the cars now stand they cannot be distinguished from privately owned automobiles, and when questioned the various city officials admitted the absence of lettering but said they had never heard of the regulation in question.

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REVISED REGAL LINE SHOWS FEW IMPORTANT ALTERATIONS

Left Drive Adopted and Rushmore System Added, Together with Complete Equipment—Clutch Release Now Ball Bearing.

Supplementing somewhat abbreviated specifications that were published two weeks ago in Motor World, additional details which now are available concerning the newer series Regal cars, serve only to emphasize what was contained in the first report, namely, that in bringing the two chassis that hereafter will constitute the line more thoroughly up-to-date, the Regal Motor Car Co., of Detroit, Mich., has found reason to make no radical changes and few revisions.

The change in construction most worthy of note concerns the control elements, the steering gear having been shifted from the right side to the left side and the gear shift and emergency brake levers from the right to the center of the footboard. At the same time, the Rushmore electric lighting and engine starting has been made a part of the regular equipment which now is included in the list prices of the various models; heretofore, Regal cars have been listed without equipment. One model, an underslung touring car carrying a 4¼ x 4½-inch motor has been discontinued.

In the two remaining chasses in the line, the mechanical alterations are unusually few and far between and, except for several minor refinements, consist of the substitution of a roller bearing clutch collar for the plain bronze collar that has been used in the past. Under the new construction, when pressure is placed on the clutch pedal, the two annular ball bearings bear backward against the flange on the clutch sleeve, causing the clutch to be disengaged. When the pressure is released, a coil spring holds the bearings free of the flange.

In revising the motors that are used in the two remaining chassis, the Regal engineer has passed his hand but lightly over them and, to the eye at least, the only change apparent is the addition of the Rushmore lighting and starting system. The system, by the way, is of the two-unit type, the generator being separately mounted from the starting motor which drives the gasolene engine through the intermediary of a steel ring gear fastened to the periphery of the flywheel. As already is fairly well known, no mechanical means is used in the Rushmore system to effect the connection between the starting motor and the car engine; the connection is established electrically through the agency of magnetism. The driving gear is fastened to the end of an endwise moving armature shaft and instantly the starting switch is closed the shaft moves endwise, drawing the gear into mesh. When the gasolene engine has taken up its own cycle of operations, the gear automatically is shifted out of engagement.

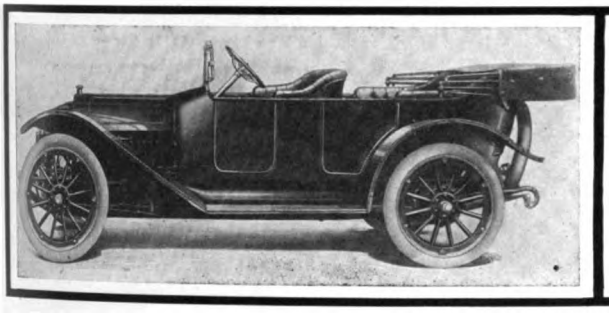
Neither the construction nor the measurements of the motors have been changed, the smaller motor, which is carried by all of the underslung cars, measuring 3¾ inches bore and 4½ inches stroke, and the larger engine, which is fitted to the conventional overslung touring car, measuring 4 x 5 inches. In both cases, the four cylinders are cast in a block, with due attention paid to the necessity for accessibility and simplicity.

Change gearsets also remain unchanged and in all three cars are mounted adjacent to the rear axle; they provide three speeds forward and reverse, control being by the usual hand lever. The master clutch is of the cone type with adjustable spring inserts beneath the leather face to provide against gripping.

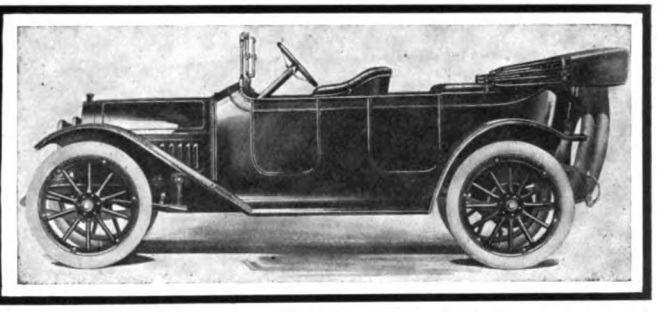
The clutch is connected directly to the forward end of the propeller shaft through the medium of a universal joint, the driving strain being transmitted through radius rods, the forward ends of which are supported in brackets riveted to the center cross frame member. As heretofore, the propeller shaft is contained in a tubular housing which serves to absorb the torque reaction. The same chassis is used in both the roadster and the coupe model and another chassis exactly the same as the first, except that it is slightly larger, is used for the conventional overslung car. One important change in this car, by the way, is that both front and rear springs have been fastened beneath the axles, making the car virtually a semi-underslung model. The wheelbase of the smaller chassis remains unchanged, as does the wheelbase of the larger one; the former measures 108 inches and the latter 116 inches.

Coincident with the slight mechanical changes that have been made, and the complete equipment that has been added, prices have been raised slightly, though they still hover about the $1,000 mark. In the case of the underslung roadster, for instance, the price has been changed from $900 to $1,125; the price of the underslung touring car also has been made $1,125 instead of $950. The new coupe model, which has lost much of its Colonial appearance and now suggests the more conventional car, lists at $1,600 instead of $1,250; and the price of the overslung touring car has been put up to $1,350 from $1,250.

Bodies, of course, have been included in the revision and this is particularly apparent in the model T touring car which proved so popular last year. Although the wheelbase remains the same, the body has been lengthened and widened; the doors have been made larger and the hinges concealed, and a cowlboard mounting the controls and other instruments added. Equipment in every case includes ventilating rain-vision windshield, top with slip cover and side curtains, speedometer, demountable rims and the usual assortment of tools, spare parts, etc.



STANDARD REGAL UNDERSLUNG TOURING CAR



CONVENTIONAL TYPE OF OVERSLUNG CAR

To Keep Sight Feed Glasses Clean.

The glass tube through which lubricating oil trickles, drips or runs, as the case may be, in a sight-feed lubricator, sooner or later becomes so fouled that it is difficult to see whether the oil is passing through or not. The accumulation of dirt can be greatly delayed by dipping the tube in melted paraffin wax after thoroughly cleaning it.

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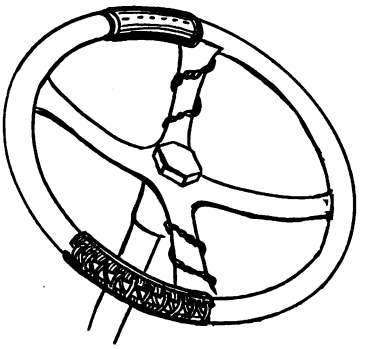
RECENT DEVELOPMENTS in ACCESSORIES

Hand Warmer That Laces on Wheel.

It's one of the hardest things in the world to keep the hands warm on a really cold day when driving a car; more correctly speaking, it is next to impossible to do it with the aid of gloves and the like. Thanks to the ingenuity of the people who are always looking out for methods of making motoring more comfortable, however, hand warmers of various kinds have been evolved that really keep out the cold, and one of the more recent of these is the one brought out by the Motorist Warm Grip Co., of Marshall, Tex.

As the accompanying picture shows, the device takes the form of a pair of grips designed to be laced to the steering wheel rim at the points where the hands usually rest. In the grips are electrical heating units that are connected, by means of a flexible cable, with the lighting battery or, in the case of a Ford car, with the flywheel magneto. The current required to maintain a comforting heat is said to be less than that required by one electric headlight. A switch for controlling the current is installed at any convenient point, such as the dashboard.

Under ordinary weather conditions it is not necessary to keep the current turned on all the time, for the wheel rim becomes warm and retains the heat for a considerable time after the switch has been turned off; furthermore, once the hands have become thoroughly warmed but little additional heat is needed to keep them comfortable.

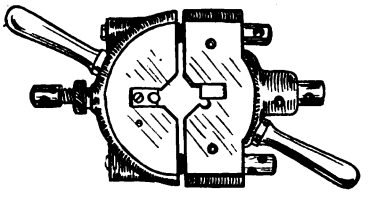


"WARM GRIP" ELECTRIC HEATER

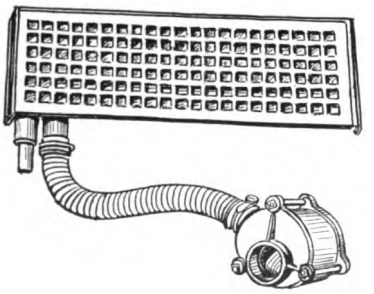
Heater for Which Four Claims Are Made.

With quantities of heat going to waste all the time the motor of a gasolene car is running, there is little or no excuse for lack of warmth in an enclosed car in cold weather, or for cold feet in an open car, for the exhaust gas can be made to give up heat enough to warm a whole house, to say nothing of a little cubby-hole in an automobile. One of the numerous appliances designed to extract this grateful warmth from the red-hot breath of the engine is the "four-in-one" heater manufactured by the Auto Heater Co. of America, which recently established itself at 1148 Bedford avenue, Brooklyn, N. Y., which is shown in the accompanying illustration.

The radiator proper consists of a series of pipes through which the hot exhaust is led; a metal grating over the pipes prevents a too close promimity to the pipe surfaces. The radiator is screwed to the floor of the car, or against the front of a seat, or, for that matter, in any position desired. A hole in the floor admits the feed pipe and another hole provides for the tail-pipe through which the waste gas escapes. A rotating valve, kept in motion by the pressure of the gases, is clamped over an opening cut in the exhaust pipe between the engine and the muffler, and connection is made with the radiator by means of flexible metal tubing. A rod, which can be carried to any convenient place in the car, serves to adjust the valve and so regulate the heat from the radiator. The manufacturers claim that the addition outlet provided for the exhaust and the contraction of the gas due to cooling has a beneficial effect on the running of the motor; in fact, the name "four-in-one" is intended to convey the claims that the heater does no less than four things—warms the car, saves fuel, reduces back pressure and increases horsepower!



G. B. CRANKSHAFT EQUALIZER



"FOUR-IN-ONE" HEATER

Crankshaft Truing Rendered Easy.

By way of rendering easier the truing of crankshafts, which operation heretofore always has required the use of a lathe and very nearly the complete dismantling of the motor, the G. B. Sales Corporation of 1,790 Broadway, New York City, just has placed on the market the device which is shown by the accompanying illustration and which is styled a crankshaft equalizer. With the device it is claimed that work which ordinarily can be performed only by an expert lathe hand and that may require from 15 to 40 hours' time, can be done by any repairman, regardless of experience, in from one-fifth to one-tenth of the time.

In many cases, it is pointed out by the makers of the device, it is not necessary to remove the crankshaft from the engine, provided only one or two bearing surfaces require attention. It is possible in such cases to drop the bottom half of the crankcase and apply the tool without disturbing any of the other parts. The device is of high grade construction throughout; the cutting blade is made of the finest grade of oil-tempered steel, and, it is stated, will true at least 25 crankshafts before it requires resharpening. The sharpening can be done easily by any repairman, or, if the blade is returned to the makers, it will be sharpened free of cost. To put the equalizer to work, the two halves are separated and clamped together around the crankshaft, after which the depth of cut can be adjusted by means of a nut at the top. The bearing opposite to the cutting blade is a roller, thus making for ease of operation.

The tool is made with such accuracy that it will leave the bearing surface upon which it is used round and parallel and will remove ridges and "scoring" resulting from lack of lubrication or very long wear. Of course it won't straighten a "sprung" shaft, but it will make a good bearing surface out of a bad one.

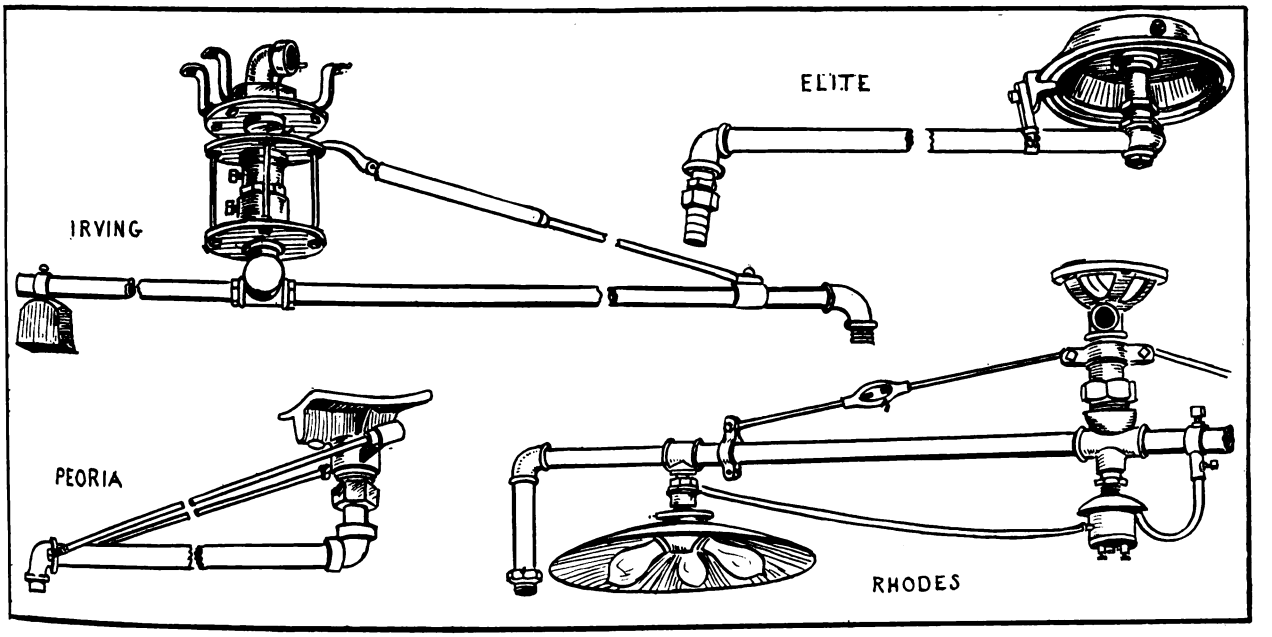
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SIMPLIFYING WASHING WITH MODERN APPLIANCES

Up-To-Date Garage Equipment That Makes Car Washing Easy and Cuts Down Operating Expenses—Hanging Hoses vs. Hoses that Drag in the Mud—Overhead Devices and Some "Always Wet" Mops Compared.

To wash or not to wash, to paraphrase the immortal Shakespeare, is not the question in the modern garage; nor have any wonderful, philosophical thoughts been uttered concerning the entirely prosaic practice of sluicing the mud off touring cars and limousines and runabouts. It is very largely a case of wash whether the garage attendant will or no, and it depends not so much on the salving of his conscience by the removal of all visible grime as it does on the condition of the paintwork of the car after the operation whether the job can be styled a truly satisfactory one or not.

It is altogether likely that if there had been any garage proprietors in Shakespeare's time, one of them, more intelligent than the rest, would have discovered in the bard's words a sermon truly applicable to his own business. Whether 'tis better in the end to suffer the slings and arrows of outrageous fortune, or to take arms against a sea of troubles, and by washing properly end them? To wash: To clean: No more; and by a wash is meant to wash the mud off and the thousand natural spots that cars are heir to—'tis a consummation devoutly to be wished. The garage proprietor's revised-to-fit-the-occasion Shakespeare might have been something like that, the burden of the song being to wash properly—to go about the work properly, in other words; not to do a slap dash, hose-dragging-in-the-mud job.



FOUR TYPES OF OVERHEAD VEHICLE WASHERS SUITABLE FOR PUBLIC GARAGES

There has been a whole lot written about the proper way to wash a car—what to use and what not to use in the way of mud and grease solvents, how to put the water on and how to take it off—though very little attention has been paid to the tools of the trade. And because a poor workman invariably blames his tools, there are quite a lot of poor workmen—because of the tools. To those who have watched the operations of the average vehicle washer, his results must be a mystery in view of his method. Gritty, greasy hose dragging through the washed-off accumulations of oily, muddy roads; time lost dragging the hose through the muck; water lost while the washer soaps the wheels and running gear; electric light bulbs "killed" in moving the portable lamp stand. The proprietor of the garage must pay for it all. If he were given to soliloquy he would do well to soliloquize somewhat after this fashion: To wash or not to wash, that is the question: Whether 'tis better to wash properly and enjoy the fruits of a labor well done, or to quit and go into some other business where washing is not necessary.

To wash a car properly is a simple job. But it is a job that cannot be done simply or properly or with any degree of efficiency under the antiquated pull-down-and-drag-hose method. In the first place, it is hard on the finish of the car. It may be easy to keep a gritty hose off the paintwork of a touring car—also it may be hard—but the boss is not always around to watch operations when the washer hoists up his hose to sluice off the top of a limousine, and in doing so inadvertently drags the hose over bright varnish; the varnish suffers. In the second place, it is hard on the hose and hose costs money. When it stretches from the water connection to the car, and possibly around the car, it is liable to be stepped on or run over and cracked and every inch it is dragged wears it out that much more. Probably the most dilapidated, worn-out piece of gear in nine garages out of ten, regardless of their whereabouts, is the

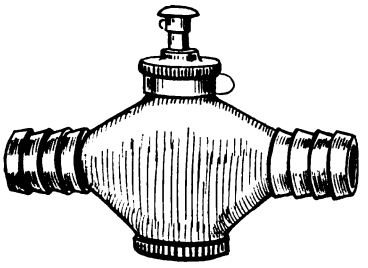
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washing hose. Its appearance, to any one who ventures within the garage, must be prepossessing—with the reverse English on the adjective.

Apparatus that Helps the Worker.

That it is easy enough to make still simpler the operation of washing a car any proprietor of a stable will attest, for it was for his benefit primarily that devices for that purpose were developed and perfected. The washing of fine carriages presents difficulties almost exactly akin to those presented by the washing of motor cars. Hence, it has been a comparatively simple matter to make such slight alterations in apparatus designed for the stable that will make it fit for use in the modern garage.

Washing apparatus in the abstract can be divided into two general classes, to wit: Those to which the hose attaches and those that attach to the hose. The latter category contains such devices as sponge and swab and brush-holders that attach to the end of the hose and through which the water passes continually. Devices in the first class consist essentially of overhead arrangements that facilitate the washing operation by keeping the hose up out of the dirt, preserving it from injury and unnatural wear, and keeping it constantly at the operator's hand regardless of his position. In both cases, there is no little variety in construction, though in no case is there any device that cannot safely be modified by the adjective simple.



FISKE WATER SHUT-OFF

Overhead Track Type Hose Carrier.

Harking back to the good old carriage days, as they are likely now to be apostrophized by those who have changed their vocations in view of the good young automobile days, probably the overhead washing device most in use was the kind that employs a circular track fastened to the ceiling, and this same device still is used in a great many cases and it is giving as universal satisfaction now as it did then—in both the stable and the garage. The Perfect Mfg. Co., of Albany, N. Y., makes several washers of this type, only one of which is illustrated herewith.

The crosshead, as it is styled, which means the wooden framework that is screwed to the ceiling and to which the circular track is fastened, is formed of six substantial cypress arms with varnish finish. The circular track is made of 1¼-inch angle iron and is seven feet in diameter—ample to provide good clearance for even a large car. The pipe and fittings are made of galvanized iron filled and bronzed and the joint at the center, which really is one of the most important parts of any such device, is heavy and substantial; the rotating section itself is 1½ inches in diameter. The roller that supports the hose and permits it to be shifted around the track is carried in ball bearings and therefore never requires lubrication, and is rubber-covered so that the action of the device is as quiet as possible. In another style produced by the same maker the same construction is followed, except that the hose connection is a double ender so that a hose can be attached at each end. With this device two men can work on the same vehicle at the same time, one on one side and t'other on t'other side. A shut-off is provided in one of the hoses, so that water will not be wasted when only one man is using the washer.

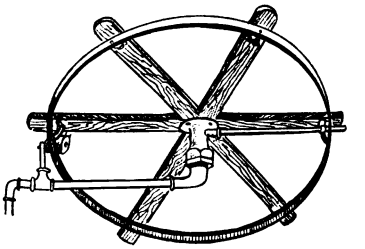
Swinging Pipes on Ball Bearings.

The advantage of this overhead track type of washing device lies in the fact that it is extremely simple, there is nothing that can get out of order, and it is not expensive; incidentally, it is as strong as any other device of the kind not using a track and will not wear out in a natural life time. The J. W. Fiske Iron Works, of 56 Park Place, New York City, is another concern that produces washers of this kind, together with washers of several other kinds designed for special purposes. The type that is illustrated herewith, for instance, was designed especially for private garages where appearance as well as utility must be considered.

It is styled the Elite and, though it has no overhead track, it has a support which is in effect a track. Encircling the rotating portion, the support carries a large ball bearing to which the extension pipe is connected by means of a very short arm, shown by the picture. That is practically all there is to the machine, except mention of the fact that it has been constructed to withstand the hard usage that it is anticipated it will sustain. In addition to washing racks, the Fiske company also produces a shut-off nozzle that is calculated to "ope' wide the eyes" of any garage proprietor with a penchant for reducing water bills. The device itself is shown by the accompanying illustration, and it can be attached by any one to any hose. In its simplest aspect it is nothing more than a valve, held closed by a spring and opened by the pressure of a finger; there is a catch to hold the valve open.

Substituting Braces for Tracks.

An overhead track is not an absolutely essential feature of a washer, of course, and there are several on the market in which braces take the place of the track. In the Peoria, for instance, which is produced by the Peoria Overhead Washer Co., of the Illinois city for which it is named, the place of the track is taken by two long steel braces that run from the central portion that attaches to the ceiling to the end of the extension pipe that carries the hose. With this washer, or with any of the others, for that matter, the water supply pipe can be either led up one of the side walls and over the ceiling, in case the main water pipe is below the floor, or it can be led in through the top, if the main water pipe passes between two floors, as often is the case.



PERFECT OVERHEAD RACK

Eliminating Broken Lamp Expense.

Broken lamps and lamp stands and reflectors are only some of the things the garage man who works in ignorance of up-to-date equipment is called upon to replace from time to time. The washer smashes lamps moving his portable stand from place to place, the hose becomes entangled in it and it flops over with a crash and not infrequently other attendants, moving cars off and on the washing stand, bowl it over accidentally. Besides, devices of the kind are a nuisance, first, because they must be moved almost continually, or the fact that they have not been moved will be apparent in the car, and second because it takes time to move them and for this reason the efficiency of the operator is reduced by no small amount.

To obviate the necessity for portable lamp stands, several makers, among them the Vehicle Specialty Co., of Hartford, Conn., have developed overhead hose-carrying devices with which there is combined a cluster of electric lights so arranged that the light always shines over the place where the washer is working. Just how this has

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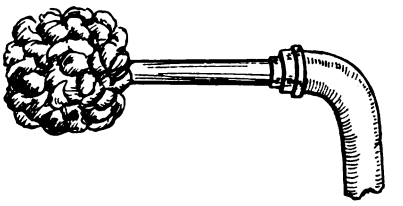
been done by the Vehicle Specialty Co. is made plain by the accompanying picture. The lamps and reflector are mounted directly on the extension pipe to which the hose is connected. So that the extension pipe can be swung in a complete circle, the wires leading to the cluster of electric bulbs terminate in a switch block which operates on the same principle as an ordinary ignition timer except, of course, that the contact rings are continuous.

The washer itself—it is styled the Rhodes—is quite a little different from any of the others, as may be seen by the picture. It has no overhead track, and by way of reducing the strain on the brace that holds the extension pipe, the pipe itself is extended in the opposite direction and this end, too, is braced. The end that is not connected to the hose, therefore, serves principally to balance the hose end, and in this way takes considerable strain off the central portion containing the rotating joint. One important function of the "blind" extension is that it keeps the hose arm properly "lined up" at all times and so reduces the wear on the joint. The joint, by the way, is so constructed that it can be adjusted for natural wear and maintained absolutely tight for an indefinite period. In construction, the pipe and braces are formed of wrought iron, the pipe fittings of malleable iron and the rotating joint of brass. The arms extend 4½ feet from the center, the spread therefore being nine feet, and the connections are made for standard ¾-inch pipe. In another type of washer, made by the same company, the construction is exactly the same, except that the lamps and reflector are missing.

Necessity for Stopping Water Waste.

In the small garage where not a very great amount of car washing is done, the bills for water may not be very large, but in a large garage where hundreds of cars are washed water must be conserved and as little wasted as possible, unless a serious cut in profits is to be expected. Hence, the garage proprietor who installs any kind of a device which will encourage the washer to economize on water makes a laudable attempt to increase profits. In any case, every drop of water saved is so much profit earned; and although several makers of washers have developed devices to help in the saving, few have reduced the problem to as simple terms as has the I. J. Smith Mfg. Co., of 4283 Park avenue, New York City, manufacturer of the Irving washer.

With the Irving washer, the operation of turning on the water or of cutting it off is performed by simply pulling down on the hose and letting it spring back to its normal position. The device is shown quite clearly by the accompanying picture, the hose arm extending on both sides of the central rotating joint and being weighted at one end to counterbalance the weight of the hose. The distinctive part of the Irving is contained in its valve mechanism. The supporting brace is a tube containing a spring which permits the washing arm to be drawn down by the operator. When it is pulled down, a valve in the center is opened and the water permitted to flow through

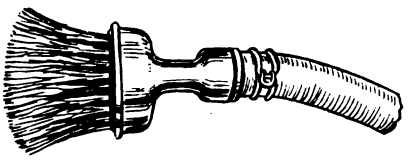


"L. M. PERFECT" MOP

the hose. When the arm is returned to its normal position the water automatically is turned off. So that the operator need not hold the arm down, a catch in the supporting tube holds it until it is desired to turn the water off, when the arm is drawn down about three inches further, releasing the catch, and then permitted to go all the way up. Another feature of the Irving that constitutes a sort of safety valve, so to speak, is that it is impossible to put a greater strain than 10 pounds on the hose. If the strain is increased the spring in the supporting tube stretches slightly, thus protecting the rotating joint.

Brushes and Mops Continually Wet.

Among the various washing devices designed to be attached to the end of the hose,



SMITH "FOUNTAIN" BRUSH

the L & M Perfect, as it is styled by its producers, the Adam A. Long Machine Works, of Rochester, N. Y., is representative of a number of similar devices designed to facilitate washing operations. It consists essentially of a nozzle to be attached to the hose and a washer end or top consisting of a mop of soft cotton yarn. Inside the nozzle there is a removable screen which filters and distributes the water to all parts of the mop. It is claimed that the yarn mop will not only outlast the heaviest and best sponge but that it will do the work of cleaning better than will the sponge. Incidentally, the yarn top alone is considerably cheaper than a sponge. Another device that is very similar in construction is produced by the Cataract Auto-Vehicle Washer Co., of Topeka, Kan., and the Rubberset Mfg. Co., of Newark, N. J., make another that is designed to hold a sponge and keep it saturated with water.

Variation of the Mop Construction.

Departing a little from the mop idea, though embodying the same principle, the device produced by the Jos. N. Smith Co., of Detroit, Mich., employs instead of a top of yarn or a sponge, a fairly stiff bristled brush through which the water flows in a continuous stream. Any device of the kind, obviously, is particularly advantageous for washing wheels and for getting into small places where mud lodges and where plenty of water is required to free it. At the least it is better than the time-honored sponge, which is comparatively expensive and which requires to be constantly dipped into a pail of water; incidentally, there is no possibility of the washer using the mop, or the brush, as the case may be, without water, or with insufficient water, and thereby laying the finish open to the likelihood of scratches.

Device that Extricates Mired Cars.

Probably there are few persons whose experiences include lengthy tours over other than the finest boulevards who have not made use of, or at least heard of, the method of pulling a car out of a ditch by wrapping a rope around a hub cap and making the engine do the work. But because it is not always easy to get a purchase on hub caps—some cars have none at all—the Pillsbury Sales Co., of 1020 Hennepin avenue, Minneapolis, Minn., has developed and placed on the market a device which it styles "Pillsbury Auto Pull." In its simplest aspect, it is nothing more than a small, detachable windlass drum fitted with clamps which attach to the wheel spokes and hold the drum firmly in place over the hub cap.

The rest of the outfit includes a stout rope and any handy telephone pole or tree. The rope is fastened to the pole or the tree, or to a stake driven into the road, wrapped around the windlass drum and the car pulled back to terra firma by the engine itself. The ingenious part of the device is that no tools are required to attach it other than a light hammer, which generally is included in every tool kit.

Pine Chips for Stopping Rattling Fenders.

Rattling fenders very often can be cured, temporarily at least, by the simple expedient of placing tiny soft pine blocks between fender and brace and drawing the bolts up snugly.

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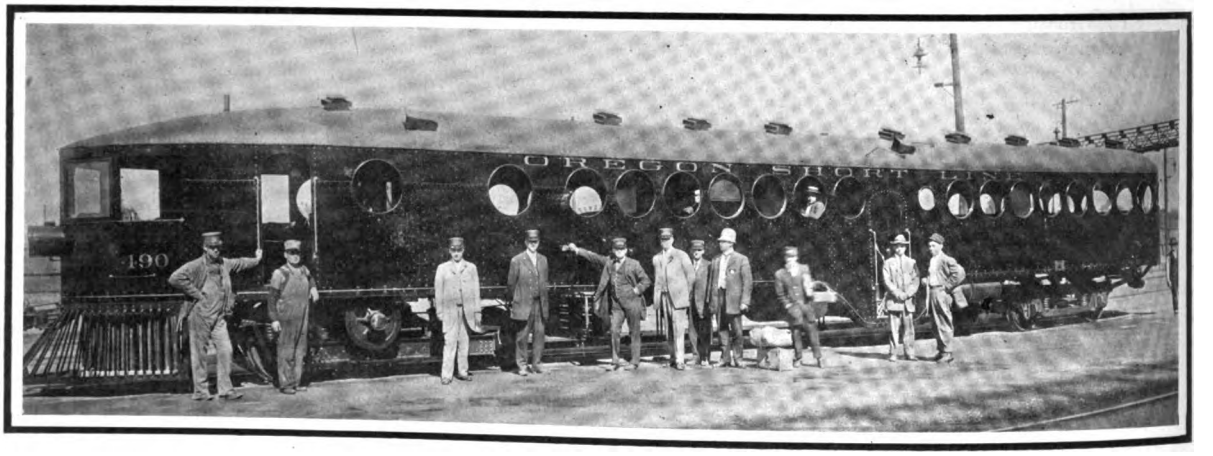
HAULING RAILROAD TRAINS WITH GASOLENE

Massive Motor Cars That Increase the Efficiency of "Short Lines" by Reducing Running Costs—How the Gasoline-Electric Drive is Applied to Passenger Coaches—Mine Locomotives That Operate on Oil.

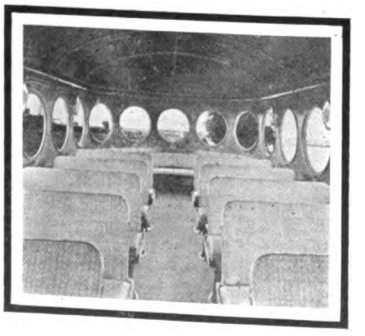
With the electrification of those portions of trunk railroad lines that feed the suburbs of great trade centers, much of the problem of quick and efficient transportation of both animate and inanimate freight has been solved; to reach such outlying districts, minutes rather than hours from the main terminal, now costs the railroads but a fraction of what it cost under the old steam regime. But up to a short time ago there still remained the problem of providing efficient (from the railroads' point of view) transportation on what are technically known as "short lines"—lines which lie off the beaten track of the railroads and which connect the larger trade centers with smaller ones. Now, however, this problem has been largely solved by the development of internal-combustion engine driven locomotives and passenger coaches, and though little of the actual development that has taken place, and still is taking place, in this field, reaches the layman, it nevertheless constitutes a more than ordinarily interesting subject and one which serves to make plain that not only in road vehicles does the gasolene engine perform valuable service.

Abroad, where a great deal more attention has been paid to the possibility of reducing operating costs with the aid of such prime movers, internal combustion engined passenger coaches and freight locomotives are comparatively common, and during the time they have been in use they have proven conclusively that they represent a substantial saving over the older steam equipment. As one concrete example, the Arad Csanad Railway in Hungary had for a number of years operated steam trains over a short line and carefully compiled statistics revealed that the actual cost per mile figured out at 15.95 pence per train mile, which is equal to about 32 cents in American money. The cost of a Westinghouse gasolene-electric locomotive-coach, hauling, on occasion, one or more trailers, on the other hand, worked out at just 8.25 pence per train mile—about 16½ cents.

In America, too, similarly astonishing results have been obtained with the use of gasolene propelled passenger coaches on some of the Western roads. For instance, it has been estimated that to operate a locomotive and a single passenger coach costs 45 cents per mile—according to Trautwine, the total expenses on railroads in the United States usually range between 65 and 130 cents per train mile; alternating current operation costs about 22 cents a train mile and direct current about 17 cents.



LATEST TYPE McKEEN GASOLENE-PROPELLED PASSENGER COACH DESIGNED FOR "SHORT LINE" SERVICE



McKEEN CAR INTERIOR

In a very careful test that was made with an internal combustion engine driven passenger coach constructed by the Buckeye Mfg. Co., of Anderson, Ind., for the Union Pacific Railroad Co., however, the total operating cost figured out at approximately 4½ cents per mile.

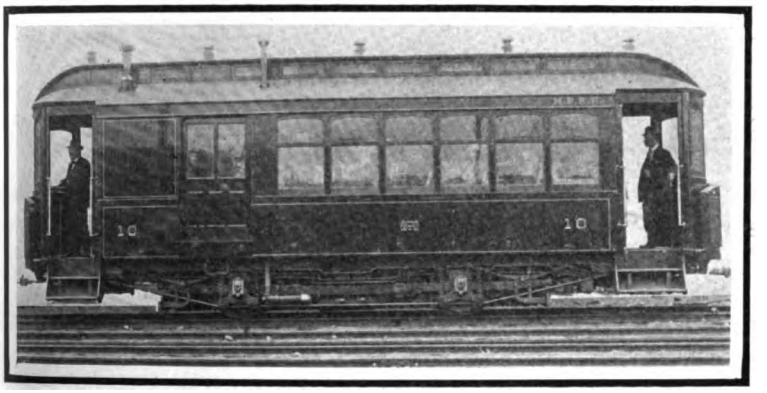
The economical value of internal combustion passenger coaches and freight locomotives, however, is not their only recommendation, though it is a mighty powerful one. It will be appreciated, of course, that their greater economy comes from their high efficiency, the elimination of "stand by" costs, reduction in the amount of labor required, comparative cheapness of fuel and reduced wear and tear due to their lighter weight; incidentally, there are no boilers to clean out nor grate bars to replace, and stops for water or fuel are not necessary.

The appeal of such cars to passengers can be second only to the appeal of the electric car, for there are no cinders or smoke, speed is limited only by the desire

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of the operating company, in case of collision or derailment there is no danger from unprotected "third" rails, and the operating mechanism can be made quite as simple as that of an electric car and a great deal simpler than that of a locomotive; hence the driver can give greater attention to the roadway and to signals designed for the safety of passengers.

In the United States, undoubtedly the largest manufacturer of internal combustion engined passenger and freight cars is the McKeen Motor Car Co., of Omaha, Neb., whose vehicles are in use not alone on home soil but in nearly every country in the world; only a few weeks ago a shipment of four narrow-gauge passenger coaches was made to Australia. All of the McKeen cars are peculiarly shaped, like an inverted boat, and there need never be any difficulty in recognizing them because of the distinctive round windows that are used exclusively. These windows, by the way, are a patented feature and are air-tight and water-proof and dust-tight. They are hinged to the roof and when open are locked up automatically. The appearance of the interior of one of these round-windowed cars is shown by one of the accompanying illustrations.



LAMBERT FRICTION DRIVEN PASSENGER COACH IN SERVICE

Starting Engines With Gunpowder.

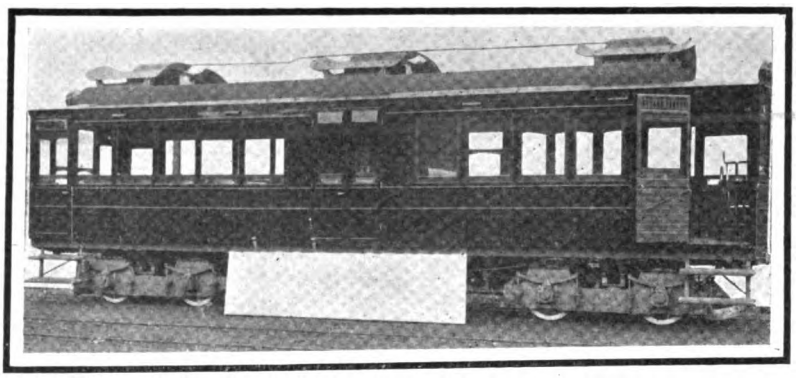
Although, if judgment is based on the action of "fierce" clutches in automobiles, it might be supposed that some difficulty would be experienced in satisfactorily establishing the connection between the gasolene driving motor and the wheels, the McKeen company has experienced no trouble from this source and remains one of the few makers who employ no intermediary apparatus between engine and wheels other than a plain clutch. In the elongated passenger coach which is illustrated herewith and which now has been in use on the Oregon Short Line for some time, the motive power is furnished by a giant six-cylinder gasolene engine with cylinders measuring 10 x 12 inches. The engine is of the air-starting and reversing type and consequently there is no necessity for a reverse gear. For starting purposes, a low gear is used, and for high gear the drive is through a massive "silent" chain. On low gear the speed of the car is 14 miles an hour at an engine speed of 350 revolutions a minute and on high gear the speed is 38 miles an hour. Air for starting, blowing the whistle and for the brakes is compressed by an engine-driven pump. Cooling of the great motor is accomplished by water which circulates through pipes in the body of the car during winter weather and in this way heats the car. For lighting, acetylene gas is used entirely.

Where compressed air is not used, the starting of the giant motors that are used in some of these passenger coaches presents a problem of no mean proportions, and it has been tackled in a distinctly novel manner by the Westinghouse company, which produces quite a number of cars for suburban service. The motors that are used in Westinghouse cars have eight 8 x 7 cylinders set V-fashion, and the initial revolution is obtained by exploding a charge of black powder in one of the cylinders, for which purpose a special type of breech block, to hold a large cartridge, is used. These Westinghouse motors, by the way, do not drive directly; they are direct connected to large dynamos which generate current that is passed to electric motors which drive the wheels.

Economy in Friction Transmission.

In the passenger coaches produced by the Buckeye company, still another method has been adopted to start the driving motor which, in the car illustrated, has a four-cylinder motor rated at 150 horsepower; the big motor is started by a smaller one having four 4 x 4 cylinders; it is located forward in the smoking compartment. This Lambert car is otherwise distinctive by reason of the fact that it has a system of transmission that is exactly like the transmission system in the Lambert pleasure automobiles. The engine drives a large friction disk against which there is pressed another to which is attached a shaft carrying a pulley and a very heavy "silent" chain to the driving wheels. By way of reducing friction in the motor to the minimum, the crankshaft is mounted on great annular ball bearings. The seating capacity of the car, which is built expressly for suburban service, is 35 passengers and the control is so arranged that the car may be driven from either end, thus eliminating the necessity for loops at terminals. The weight of the car without load is approximately 11 tons.

In order to obtain great flexibility of drive and to permit easy and sure starting without jerk or jar, the British Leland company utilizes what is known abroad as the Thomas Petrol-Electric transmission, the principal elements of which are shown herewith, together with one of the passenger coaches to which it is fitted. Briefly, the Thomas system provides for an electrical drive for all intermediate speeds with direct mechanical connection between the engine and the road wheels on "high gear," or, as the British put it, "top gear." There are two dynamo-motors, one of which drives the other on occasion and also serves to maintain a storage battery of 18 cells



LEYLAND 160-HORSEPOWER COACH WITH THOMAS TRANSMISSION

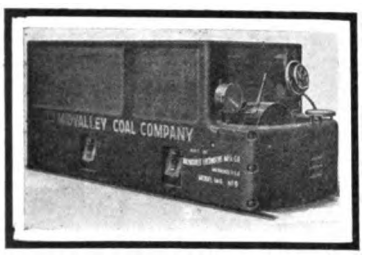
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charged; this battery is used for starting and lighting.

Gas-Electric Transmission in Use.

Although the Thomas system is fairly well known abroad and has been used with a great deal of success in both pleasure and commercial road vehicles, this is the first time it has been applied to a rail vehicle and the service in which the car is used is an unusually rigorous one. The car is used in Central South Africa on a railroad upon which sharp curves and heavy gradients abound; in many cases the grades measure 1 in 25 or 30, though despite this fact, it is stated, the car has been able to maintain a speed of 30 miles an hour for the length of its run; its maximum speed with full load is 50 miles an hour. The motor has six cylinders cast in pairs and measuring 7 x 7 bore and stroke, and the rated horsepower is 170 at 670 revolutions a minute.

As little known as are internal combustion engine driven passenger coaches and freight locomotives—by comparison with



MILWAUKEE "GAS" LOCOMOTIVE

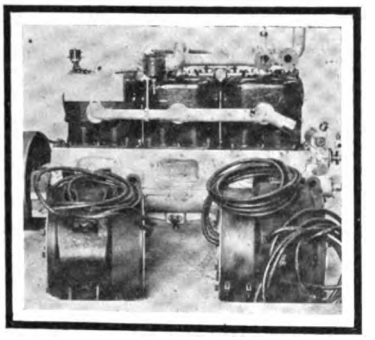
steam and electricaly driven rail cars—even less known is the gasolene or kerosene driven mine locomotive, though the industry that is built around these interesting little evidences of modernization has been steadily built up and is increasing. For use in mines where inflammable gases are liberated by the mining operations, neither steam, with its open flame boilers, nor electricity, with its sparking and sputtering trolleys or "live" rails, can be used, of course, and it is for this reason that the internal combustion engined locomotive steadily is ousting pony or mule power, which is slow and unprofitable and, above all, unreliable.

Where Gasolene Replaces Mule Power.

In the modern mine, ore cars and supply cars are drawn by a quiet little gasolene or kerosene-propelled locomotive that scarcely looks large enough to haul itself, let alone haul a string of "empties" or loaded cars. Obviously, these diminutive locomotives must be small, for they must go into very small places; and because they must also go into very dirty places it is absolutely essential that their mechanism be fully enclosed and protected alike from dirt and from the danger of accidental injury from falling rock and from the abuse to which they are likely to be subjected by their uneducated operators.

Need for Fireproof Construction.

Across the Atlantic these little mine locomotives are used to a much greater extent than is the case in America, though the Milwaukee Locomotive Mfg. Co., of Milwaukee, Wis., has made a strong bid for American business and has hundreds of its locomotives in operation all over the country hauling anything and everything from coal to ashes, clay, brick and cement. One of them is illustrated herewith, the picture



LEYLAND POWER UNITS

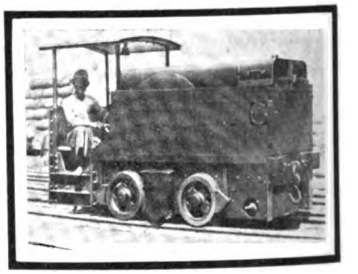
showing the careful manner in which the whole of the mechanism is enclosed and protected.

For motor power these cars have a four-cylinder vertical gasolene engine, though any fuel from distillate to kerosene or alcohol can be burned with equal facility. Power from the motor is transmitted to the driving wheels through a two-speed spur gearing in which the gears are constantly in mesh, and the speed changes are obtained by means of sliding dog clutches. For reverse there is a large cone clutch, opposite to the cone used for driving ahead; either clutch may be engaged by rotating the hand wheel shown in the picture. Where the locomotives are designed for underground use, they are fitted with removable fuel tanks, thus obviating the necessity for storing fuel in the works. To prevent the possibility of mine explosions, the mufflers are fitted with very fine wire screens which make it impossible for sparks to escape. In other types, the exhaust is led into a chemical solution and all flame is effectually extinguished.

By way of comparison with foreign standards in the construction of utility cars of the same general type, there is illustrated herewith a typical British mines locomotive, the photograph showing the machine at work on a wharf in Burmah; the machine illustrated is produced by Ironside Son & Dykerhoff. The motor operates on "petrol," which is the British equivalent of gasolene, and the fuel consumption is said not to exceed .66 pound per brake horsepower hour. Transmission is by spur gear and metal-to-metal clutches, final drive being through a large-size Reynolds "silent" chain running in an oil bath and completely enclosed. For control there is a single wheel, which, for forward speed, is rotated in one direction, and for reverse in the other direction.

Cheapness of Producer-Gas Cars.

In all of the operative cost comparisons that have been made the fuel used has been gasolene, though obviously the figures could be considerably lowered through the use of kerosene or some other distillate that is not in such great demand as is gasolene. Already experiments are being carried on with a view to using the heavier distillates for this purpose, and Dr. Diesel's locomo-



PARAFFIN DOCK LOCOMOTIVE

tive, it is understood, has been completed and has given a good account of itself in its first trials. Furthermore, the Ironsides company has produced quite a number of internal combustion engined rail locomotives operating on producer gas in which the total operating cost has been as low as four cents per car mile, which of course, is so ridiculously low as compared with the cost of operating even the lightest of steam engines as to leave no room for doubt regarding the economical value of prime movers of the kind.

Steel Tires Banished on Trucks in Paris.

No more steel-tired commercial vehicles will be allowed on the streets of Paris after the 15th of the present month, according to the order of a new prefect of police. The order, which was promulgated in the larger German cities some time ago, is an effort to ameliorate traffic conditions. Heavy haulage has been well established in the French capital, and the steel tires are said not only to be noisy but to work great damage to the pavements. With the order goes a speed restriction of 7½ miles an hour for trucks.

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DE PALMA DRIVES FAST ON TRENTON HALF-MILE TRACK

Immense Crowd Sees Him Win Three of Seven Events with Mercer Car in Mercer Territory—Wishart the Runner-up.

Almost within their own backyard, three Mercer cars, piloted respectively by Ralph De Palma, Spencer Wishart and Ed. Pullen, proved the center of attraction of the Saturday afternoon racemeet that rung down the curtain on the Interstate Fair at Trenton, N. J., on the 4th inst. Originally, the meet was scheduled for Friday afternoon, but owing to continued rain, which made the track sloppy, it was put over one day. Of the three Mercer pilots, De Palma, needless to add, was the bright particular star, for he won every event in which he started —which means that he accounted for three out of the seven races on the card. And, as usual, Spencer Wishart was the runner-up, in all but one event.

During the whole of the afternoon, the weather was all that could be desired, and in consequence the grandstands were jammed to capacity; it is estimated that the crowd that turned out is the largest that ever assembled in Trenton to witness automobile races. The track was in excellent condition, the rain serving to lay the dust and to harden slightly the soft spots, and it is probable that if the track had been larger—it measures only one-half mile in circumference—record time would have been approached, if it was not beaten. As it was, De Palma had no particular difficulty in distancing his competitors, and at no time was there any doubt regarding the winner's name after the starting gun had been fired. The summary:

Five miles, class C, 161-230 inches—Won by Roberts (Roberts special); second, Lonsetreth (Ford); third, Tams (Hudson). Time, 7:39¾.

Ten miles, class E, under 300 inches—Won by De Palma (Mercer); second, Wishart (Mercer); third, Pullen (Mercer). Time, 13:24.

Five miles, class E, under 450 inches—Won by De Palma (Mercer); second, Wishart (Mercer); third, Pullen (Mercer); fourth, Hauft (Buick). Time, 6:27.

One mile time trials—Won by Huchman (Mercedes) 1:06⅗; second, Wishart (Mercer), 1:14¼; third, Applegate (Lozier), 1:18.

Ten miles, class D, free-for-all—Won by De Palma (Mercer); second, Wishart (Mercer); third, Applegate (Lozier). Time, 13:10¾.

Australian Pursuit race, class E—Won by Wishart (Mercer).

Ten miles, class E, free-for-all handicap —Won by Roberts (Roberts special); second, Pullen (Mercer); third, Hauft (Buick). Time, 13:58¾.

Judge Condemns the "Speed Trap."

It sounds too unusual to be true, but it nevertheless is a fact that there is one judge in the country who has no use for "speed traps" and who refuses to stand for the conviction of any motorist who is enmeshed in the toils of the law through "lying in wait" methods. He is Judge Walter A. Ferris, of Port Chester, N. Y., a Westchester county village of approximately 13,000 inhabitants.

A few days ago when a motorist was arraigned before him, Judge Ferris turned to the motorcycle patrolman and said: "I am not going to stand for any traps to catch automobilists. You can bring them in here by the thousand, if you want to, and if you are going to hide to catch them I will discharge every one of them. Get out in the open and catch them, if you want to, but don't hide behind fences."

The cause of this remark was the arraigning of James Tate, chauffeur for Henry Steers, of King street, who was arrested for speeding on King street in an automobile at the rate of 42 miles per hour. When the court learned that Patrtolman Henne had been standing with his motorcycle on Comly avenue, and had "popped out" on the unsuspecting offender, he refused to fine the man, and discharged him.

The judge explained that he is anxious to have the law enforced, but he does not believe in this "trapping business" and will not convict prisoners brought before him who have been caught in that manner.

Disbrow Sets up New Kind of Record.

Louis Disbrow established a record for a cloudy afternoon in Oklahoma City on Friday last, 3rd inst. Officially, however, it was styled a "world's record for one mile on a half-mile track," but as there is no such thing—at least in the eyes of the American Automobile Association, or any other sports governing body—it must have been the other. And the only reason he did not make a record for a real rainy Saturday afternoon was that the track was too wet; it was supposed to be a two-day meet, but the last half was called off. Disbrow's record was made in his Simplex, with which he circled the track twice in 1:05⅗, which is pretty fast driving even if it is not a record. Not to be outdone, Endicott sallied forth in a Case and whirled off four whirls in 2:17, thereby establishing a new "world's record," of course. Otherwise, the meet was the usual Disbrow triumph, with Endicott and Hearne and Heinemann not very frequently showing in front.

VANDERBILT AND GRAND PRIX ARE FORMALLY DECLARED OFF

Savannah Automobile Club Unable to Obtain Enough Entries, Will Return Trophies — Resurrection Is Unlikely.

All hope for the holding of the Vanderbilt and Grand Prix races, this year at least, has petered out. The races are off, irrevocably and unequivocally, as far as Savannah is concerned, and as Savannah was the only place they could be held—where preparations were complete enough—there won't be any races in 1913. The final action abandoning the races was taken at a meeting of the Savannah Automobile Club on Monday night, 6th inst., when President Harvey Granger announced his inability to influence a sufficient number of entries to make the contest worth while. Most of the trouble was caused by the club refusing to waive entry fees.

When in New York in search of entries, he let it be known that unless 10 signed blanks were in hand by October 5th, when the entry list would close, the whole project would be called off. And as the entries did not materialize the trophies will be returned to the Motor Cups Holding Co. and the grandstands will be taken down and laid away in camphor. Whether the races will be held next year it is too early to predict with any degree of accuracy, though if they are held it is certain that the course will be located in some other section of the country. Trenton enthusiasts have several times suggested that a course in the vicinity of that New Jersey town could be prepared and properly policed, and it seems as likely that the races will be held there as anywhere else—provided they are held at all.

Engine Starting that Up-Ended 'Bus.

Every once in a while a story that is almost good enough to be true comes from lands across the sea, and one of the latest is a real poser. It is not accompanied by a written guarantee. It sets forth that a big omnibus, with a long rear overhang, was taking on passengers, who congregated at the rear end of the machine, when the motor stopped. The driver went to the crank and gave it a vigorous upward heave; but instead of "turning over" the motor, he lifted the front end of the machine right up in the air, the weight at the rear end being so great as to cause the 'bus to tilt back on its rear wheels, much to the temporary terror of the chauffeur, who must have been terribly frightened at the sudden apparent increase in his strength.

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PREVENTING SHOW WINDOWS FROM BEING MERE MIRRORS

"Shadow Box" Which is Designed to Eliminate Glare from Plate Glass Front—Construction Radical—How the Device Operates.

Eliminating the glare which makes a mirror of a show window and thereby decreases if it does not destroy the window's value, is a problem with which dealers and accessory men have coped unsuccessfully; many an otherwise excellent showroom is hidden from the public merely by the fact that when a passer-by looks toward the window he sees not what is within but his own reflection or that of the buildings across the street.

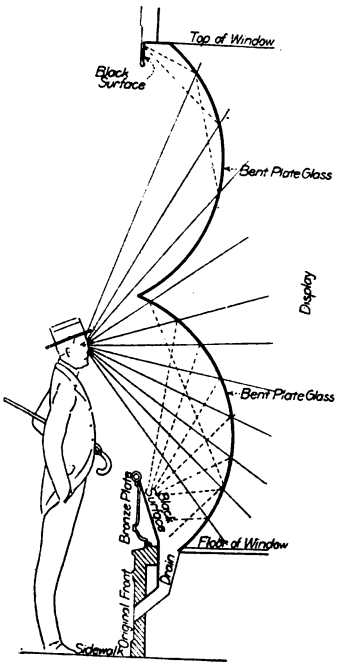
To remedy this salesroom defect Tron O. Peterson, who is president of the Store Improvement Co., Inc., of 1476 Broadway, New York City, has patented and is about to market a store window which is revolutionary in its character and a model of which does what its inventor claims for it, although he has not yet completed his first real window. One, however, is being constructed for R. H. Macy & Co., one of New York's largest department stores, and the project has aroused considerable interest in merchandizing circles.

What the window is is partially made clear by an accompanying illustration, but further description is necessary. It is styled a "Shadow Box" window, and is the result of five years' experimentation by Peterson, who has been a sales manager, store efficiency expert, patent investigator and numerous other things.

The window is made of two sections of curved plate glass. These are arranged one above the other, and joined by a ground glass edge or a metal binder, and each is as long as the window is wide. To preface the description, it may be stated that with an ordinary flat window the glare is caused by light from the sky or street meeting the window and being reflected to the eye of the observer. This causes the glare, and the reflected light is so much stronger than the light within the window that the observer is unable to see through. To see clearly he often must put his face to the glass and shield his eyes with his hands.

The "Shadow Box" window is designed to prevent this reflection. When an observer stands as does the figure in the illustration, a line drawn from his eye to the glass and reflected at the proper angle leads, as is seen, to what is marked "black surface" at the bottom of the window. Therefore, any light which is to be reflected to his eye from the window must come from this surface, and since the surface is black there is no reflection. By following any one of the lines from the observer's eye it will be found to lead to the black surface of the "shadow box."

The lower curved section is all that generally is used by a man of average height in looking through the window, but to make the scheme complete the upper curved section is added and is fitted with a "shadow box" at the top, marked also "black surface." To allow for water which might accumulate in the box at the bottom of the window, a drain is provided to the sewer in the basement or, when that is not practicable, to the sidewalk, as is the case in the illustration.



"SHADOW BOX" WINDOW

The fact that the in-curve of the window lessens the window floor space is not so great a disadvantage as might seem, for the best of window trimmers state that no large figure ever is placed within three feet of the base line of the window, and in the case of cars this distance might be still greater with advantage. Peterson states that the curved window also offers greater resistance to wind than does a flat glass.

In viewing a model window which Peterson has constructed, showing his device and a flat window side by side, each containing identical displays, the Peterson window accentuates a not generally realized fact that since plate glass absorbs a certain quantity of light, any article displayed is just that much darker when viewed from without. The Peterson window, however, gives a better effect than does the flat type.

STANDARDIZED SELLING AND WHY IT IS MOST EFFECTIVE

Cole Representative Applies Cole's Favorite Word to Salesmanship—Says It Is Presenting Best Points in Best Way.

Of course, "Standardization" is a busy word with the makers of Cole cars, and it is not surprising that when Homer McKee, of the Cole Motor Car Co., addressed a meeting of advertising men in Chicago he should bring up the matter of "standardization." He did so, but did not apply it to a car. He recommended the standardization of salesmanship, and of advertising.

McKee described a sixth sense which enables a man to "feel" the public pulse and attitude. "I think that the greatest asset that an advertising man can have is what I would call a sort of sixth sense," said McKee, "and which I would distinguish as his sense of mass psychology. This is an inherited thing, an instinctive thing. You cannot acquire it behind anybody's counter, or in anybody's factory, or in anybody's school

"If Providence has denied you this instinct which enables you to anticipate the reception which your efforts will be given at the hands of the public, no advertising genius can give it to you at 15 per cent on the net. When you have proven, however, to yourself that you can sense the attitude of the public toward any given effort with reasonable accuracy, you have resolved your problem into its simplest form.

"When you have succeeded in analyzing your merchandise problem in the best possible way; when you have succeeded in transcribing its selling advantages into the best possible expression; when you have dressed this best possible expression up until it has become as appealing as possible—after you have done all this, if you then print this expression, which we call an advertisement, in the best possible medium for your particular purpose, you have standardized your advertising.

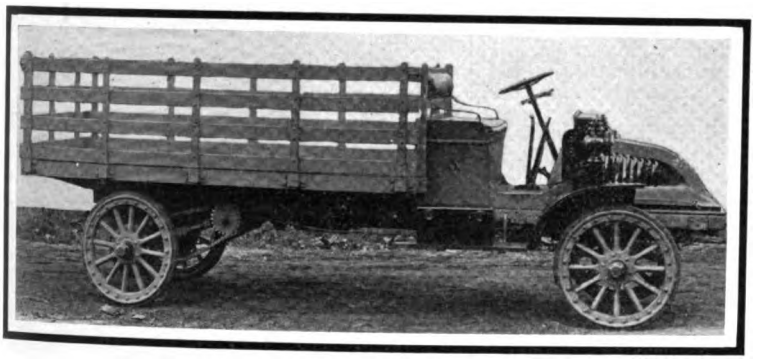
"Now, the same principle applies to the problem of salesmanship in precisely the same way. When you have succeeded in analyzing your merchandizing problem in the best possible way, and transcribed its selling advantages into the best possible sales talk; when you have dressed yourself and your speech up, until you become the best possible vehicle for this sales argument; when you have done this, and have thrown your whole soul into the business of moving your commodity at the legitimate profit, you have done your duty in the best possible way. You have standardized your salesmanship."

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BIG AND LITTLE MODELS IN HORNER TRUCK LINE

Sizes Range from 1 to 5 Tons and All Have Continental Motors — Improved Cooling System Has Condenser Over Radiator.

In somewhat revised form, though bearing most of the earmarks of its predecessor, the Grabowsky truck, the Horner truck is offered by the Detroit-Wyandotte Motor Co., of Wyandotte, Mich., in no fewer than five sizes—1, 1½, 2, 3 and 5 tons capacity, respectively. As stated in Motor World some time ago, the Seitz Automobile & Transmission Co., of Wyandotte, purchased much of the Grabowsky machinery at the receiver's sale and proceeded to prepare a line of machines differing from the older models chiefly in the use of a stationary power plant instead of a "quick detachable" one, and in having the radiator behind the engine instead of the more conventional forward position. G. A. Horner, who was in charge of the Grabowsky plant for the receivers and is general manager of the newer company, has with him Wm. Parkin, who developed the Rapid and Grabowsky trucks, as chief engineer; John Baker, Jr., first sales manager of the Rapid company and for years secretary and sales manager of the Grabowsky company, as sales manager; Robert A. Parker, formerly traffic manager for the Rapid company and later service manager for the General Motors Truck Co., as assistant sales manager; and as service manager, Morris Pierce, who for years held a similar position with the Grabowsky company. Obviously, Horner and his staff are not lacking in familiarity either with their own truck or with the motor truck situation generally.



SIDE VIEW OF HORNER TRUCK SHOWING SLOPING HOOD

Throughout the line of Horner trucks Continental motors are employed. In the three smaller sizes the same motor is installed, the bore and stroke being 4⅛ x 5¼ inches, respectively; the cylinders are cast in a single block and are of the L-head type. Valves are enclosed, as in all Continentals. Of course, the motor of the 3-ton machine is more powerful, the bore and stroke being 4½ x 5½ inches. The cylinders are of the L-head type, as is the case with the smaller engine, but the castings are made in pairs. In the big 5-tonner the engine is still larger and is of the T-head type, with cylinders of 5¼ inches more and 5¾ inches stroke. In all cases ignition current is generated by Mea magnetos. Also standard in all the trucks are Brown-Lipe gearsets, disk clutches and differentials, Spicer universal joints, Whitney chains, Timken roller bearings and Ross steering gears.

Considerable constructional work in the way of manufacturing parts for the cars is done in the company's own shops, where are built the frames, rear axles, front axles and jackshafts. In the case of the lighter types the frames are of the conventional pressed steel variety, while in the "big fellows" heavy structural steel is the material used for this purposes. Owing to the very rough treatment that often is unavoidable in motor truck service, more or less trouble with spring fastenings is not uncommon. In the Horner truck, special pains have been taken to eliminate this form of annoyance and in addition to the usual two spring clips securing the springs to the axle, there is a third clip at the center, passing through the axle. This system, together with the use of a high grade of spring steel, goes a long way toward eliminating faults in the suspension. The rear spring system is of the platform type, and all the parts are extremely substantial, notably the shackles, all the bolts of which are provided with means for the easy application of lubricatiton. Heavy radius rods, which are adjustable as to length, maintain the proper distance between front and rear sprockets. The front springs are semi-elliptic and are made and secured to the axles in the same way as the rear springs.

Overheating in a motor truck, due to a poorly designed or faulty circulation system, is a serious matter and capable of making trouble that is considerably more far-reaching in its effects than the mere delay caused by waiting for things to cool off. In the Horner truck particular study has been made of this phase of the truck problem, and the machine has been made proof against extremely hot climatic conditions, it is claimed.

Substantially mounted at the rear end of the sloping hood which covers the motor, the radiator takes air from both sides and from the front; a special opening in the center of the radiator is provided for the passage of hot air from the engine. The fan, which is of large size, maintains a current of cold air over the motor as well as through the radiator. At the top of the radiator there is an expansion chamber which also serves as a condenser for any steam that may form, turning it to water and sending it back to the circulating system. The position of the radiator is such as to give easy access to the motor and transmission, which are mounted together in a sub-frame and well protected against twisting stresses.

Care Needed in Tempering Tools.

In heating tools made of the finer grades of tool steel preparatory to hardening them it is absolutely necessary that great care be taken to see that the heated metal does not come in contact with the air or with gases which may have a deleterious effect on the metal. For this reason steel manufacturers recommend that fine tools be heated in an electric muffle furnace. Oil or gas muffle furnaces also may be used, but with them there is greater danger that combustion may not be as perfect as it should be and that, as a result, a certain quantity of gas will be liberated that may affect the tempering, and to some extent impair the quality of the steel.

It is equally as essential that tools be heated slowly and evenly. Time is quite as necessary in the operation as is heat, provided good results are to be expected and the finished tool is to stand up in use. Another important consideration is that the quenching bath must be perfectly clean; as soon as the liquid shows signs of becoming dirty it should be thrown out and fresh solution provided. In quenching the tool, it should be left in the bath until all vibration has ceased, when it should be taken out and reheated until water will boil on it. The tool is then placed in a tank of clean oil and permitted to remain in it until it is cool enough to handle without gloves. Immediately afterward the temper should be drawn to the required color, completing the process.

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1,057,479. Vehicle. John Charter, Whitman, Mass. Filed April 19, 1912. Serial No. 689,704. (Front axle carried on laterally swiveling segment.) 1 claim.

1,057,485. Heating Device for Automobiles. Geo. F. Knollmann, Evansville, Ind. Filed June 6, 1912. Serial No. 702,136. (Exhaust gas heater.) 1 claim.

1,057,498. Motor and Transmission Supporting Frame for Motor Vehicles. Walter F. Pfander, Flint, Mich., assignor to Durant-Dort Carriage Co., Flint, Mich., a corporation of Michigan. Filed Feb. 2, 1912. Serial No. 674,983. (Friction transmission system.) 9 claims.

1,057,506. Carburetter for Internal-Combustion Engines. Elbridge W. Stevens, Baltimore, Md. Filed June 2, 1910, Serial No. 564,661. Renewed Sept. 28, 1912. Serial No. 722,980. (Carburetter with throttle, air and fuel valves interconnected.) 12 claims.

1,057,514. Resilient Tire. Arthur W. Washburn and Charles D. Keeler, Memphis, Tenn. Filed Jan. 17, 1912. Serial No. 671,552. (Tire with a plurality of annular rows of pneumatic chambers.) 1 claim.

1,057,524. Gear-Shift Lever Device. Phares W. Brubaker, West Reading, Pa. Filed March 18, 1912. Serial No. 684,580. (Locking device for selective gear lever.) 9 claims.

1,057,526. Power-Transmission Device. Armand Calame, Elgin, Ill. Filed Sept. 9, 1912. Serial No. 719,323. (Planetary transmission gear.) 3 claims.

1,057,530. Power-Transmission Mechanism. Joseph Doepker and Fredereick W. Burger, Fort Wayne, Ind. Filed May 31, 1912. Serial No. 700,878. (Cam-operated band-and-drum clutch.) 3 claims.

1,057,561. Hub for Detachable Wheels. Pierre Lapertot and Antoine Fayard, St. Etienne, France. Filed July 30, 1912. Serial No. 712,314. (Quick-detachable hub for wire wheels.) 2 claims.

1,057,570. Windshield. Isaac C. McQuillan, Pittsbrugh, Pa., assignor to Winterton Mfg. Co., Pittsburgh, Pa., a corporation of Pennsylvania. Filed Nov. 9, 1910. Serial No. 591,478. (Windshield hinge with ball catches.) 2 claims.

1,057,617. Transmission-Gear-Shifting Mechanism. Alanson P. Brush, Flint, Mich. Filed Feb. 15, 1911. Serial No. 608,667. (Selective control for sliding gears.) 2 claims.

1,057,623. Hydraulic Power-Transmission Mechanism. Louis Marie Gabriel Delaunay-Belleville, Paris, France, assignor to Societe Anonyme des Automobiles Delaunay-Belleville, St.-Denis, France, a corporation of France. Filed June 12, 1911. Serial No. 632,620. (Control for hydraulic transmission system.) 3 claims.

1,057,638. Automatic Lamp Lighter and Controller. William C. Hamilton and William Lee Bird, Indianapolis, Ind. Filed March 23, 1912. Serial No. 685,892. (Combined control valve and switch.) 8 claims.

1,057,672. Automobile-Tire. Jacob Ruppert, Jr., and Ernest Siegel, New York, N. Y., assignors of fifty-two one-hundredths to Ernest Siegel, and twenty-four one-hundredths to Michael J. Cantor, New York, N. Y. Filed March 5, 1912. Serial No. 681,685. (Solid sectional tire and fastenings.) 5 claims.

1,057,676. Pneumatic Tire. George A. Shaw, Barberton, Ohio. Filed Nov. 27, 1911. Serial No. 662,721. (Pneumatic tire with heavy tread member.) 1 claim.

1,057,734. Automobile and Vehicle Tire. Samuel A. Harrison, Chicago, Ill. Filed Sept. 22, 1911. Serial No. 650,784. (Bowed springs between inner and outer rims.) 1 claim.

1,057,741. Gas-Engine Cylinder. Thos. W. Keen, Swissvale, Pa. Filed June 8, 1912. Serial No. 702,552. (Sectionally cast cylinders.) 5 claims.

1,057,746. Emergency Tire. Franklyn William Kremer, Carlstadt, N. J. Filed Aug. 5, 1910. Serial No. 575,754. (Solid tire with clincher beads.) 1 claim.

1,057,775. Transmission-Gearing. James R. Ricketts, Los Angeles, Cal. Filed April 1, 1912. Serial No. 687,869. (Connection for forked torque tube.) 2 claims.

1,057,822. Flexible Coupling for Driving-Wheels. Richard F. Grant and Herbert E. Wetherbee, Cleveland, Ohio, assignors of one-third to Howard M. Hanna, Jr., Cleveland, Ohio. Filed Dec. 30, 1911. Serial No. 668,801. (Spring device for cushioning drive.) 11 claims.

1,057,865. Control Lever Lock for Motor Vehicles. Hiram P. Maxim, Hartford, Conn., assignor to the Waverley Company, Indianapolis, Ind., a corporation of Indiana. Original application filed Feb. 27, 1908, Serial No. 418,056. Divided and this application filed March 15, 1912. Serial No. 683,999. (Electric vehicle controls.) 9 claims.

1,057,888. Safety Cranking Device for Engines. Adolph Schreck, Phoenix, Ariz., assignor of one-third to J. Fred Cleveland, Phoenix, Arix. Filed Nov. 25, 1911. Serial No. 662,374. (Anti-kick crank with ratchet release.) 4 claims.

1,057,902. Wheel. Charles E. Wade, Masonville, and Charles J. Lagerwall, New York, N. Y. Filed Nov. 2, 1911. Serial No. 658,162. (Wheel with annular helical spring between inner and outer sections.) 3 claims.

1,057,904. Electrical Vulcanizer. Walter Henry Welch, London, England, assignor to Harvey Frost & Co., Ltd., London, England. Filed July 25, 1912. Serial No. 711,565. (Electric vulcanizer with water compartment.) 5 claims.

1,057,907. Automobile Wheel. Levi B. Wilson, Philadelphia, Pa. Filed Aug. 5, 1911. Serial No. 642,432. (Wheel with cylinder-and-piston spokes.) 2 claims.

1,057,916. Vehicle Wheel. Frank Barta, Ja., Deerfield, Mont. Filed Aug. 27, 1912. Serial No. 717,385. (Wheel with springs between inner and outer sections.) 1 claim.

1,057,937. Indication of the Speed of Moving Vehicles. Stuart Mill Colman, London, England. Filed May 24, 1909. Serial No. 498,077. (Speed-indicating lamp operated from road wheel by flexible shaft.) 1 claim.

1,058,005. Wheel for Motor and Other Vehicles. Robert William Sewell, Brooklyn, N. Y., assignor to Sewell Cushion Wheel Co., Detroit, Mich. Filed Feb. 20, 1909. Serial No. 497,207. (Rubber cushion between inner and outer rims.) 2 claims.

1,058,006. Vehicle Wheel. Oscar K. Sletto and William J. Shannon, Bend, Oreg. Filed April 26, 1912. Serial No. 693,485. (Wheel with dual tires and spring connection between spokes and tires.) 5 claims.

1,058,758. Vehicle Steering Mechanism. Samuel H. Kennedyq, Tunnel Hill, Ga. Filed April 5, 1912. Serial No. 688,749. (Rack-and-pinion gear with lever connections.) 4 claims.

1,058,805. Speedometer Drive-Gear. John K. Stewart, Chicago, Ill. Filed Jan. 18, 1913. Serial No. 742,780. (Gear system for speedometer drive.) 6 claims.

1,058,811. Rotary Self-Starter. Edward J. Thurber, New Orleans, La., assignor to Thurber Rotary Starter Co., Inc., New Orleans, La. Filed Aug. 23, 1912. Serial No. 716,634. (Engine starter with rotary motor.) 8 claims.

1,058,834. Shock Absorber. Samuel H. Yancey, South Bend, Ind. Filed Feb. 16, 1912. Serial No. 678,012. (Auxiliary spring with lever connections.) 3 claims.

1,058,835. Headlight-Steering Mechanism. Frederick H. Young, Wilmington, and George N. Cameron, Marshallton, Del. Filed Sept. 25, 1912. Serial No. 722,346. (Headlights moving with steering gear.) 3 claims.

1,058,864. Vehicle. George P. Henderson and John F. Parrott, Portland, Ore. Filed Oct. 24, 1910. Serial No. 588,722. (Spur gear drive direct to wheels.) 4 claims.

1,058,878. Universal Joint. Richard H. Lowndes, Atlanta, Ga. Filed June 18, 1912. Serial No. 704,448. (Universal joint with two rings.) 5 claims.

1,058,883 Lever-Control Mechanism for Motor Vehicles. Robert A. McEwen, Natoma, Kans. Filed May 19, 1911. Serial No. 628,323. (Interlocking pedal control system.) 1 claim.

1,058,899. Motor Vehicle. Henri Pieper, Liege, Belgium. Filed March 29, 1907. Serial No. 365,212. (Electrical speed-control system.) 6 claims.

1,058,910. Distance Recorder for Automobiles and Other Vehicles. Otto Schulze, Strassburg, Germany, and Edouard Seignol, Paris, France. Filed Oct. 6, 1911. Serial No. 563,258. (Disk type automatic recorder.) 4 claims.

1,058,956. Apparatus for Storing Gasolene and Other Inflammable Oil. Charles L. French, Cambridge, Mass. Filed April 19, 1911. Serial No. 621,966. (Liquid seal for filling-pipe.) 4 claims.

1,058,992. Internal-Combustion Engine. John Loftus, Albany, N. Y. Filed Sept. 6, 1912. Serial No. 718,892. (Compression chamber formed in piston.) 9 claims.

1,058,996. Valve Structure. Marshall E. Morel, Sheridan, Ill. Filed Oct. 16, 1912. Serial No. 726,187. (Reciprocating piston valve and driving gear.) 1 claim.

1,058,998. Wheel. Morris B. Okun, Seattle, Wash. Filed April 11, 1912. Serial No. 690,208. (Sectional tire, sections supported on spring-plunger spokes.) 3 claims.

1,059,009. Wheel. John E. Strietelmeier, Cincinnati, Ohio, assignor to The Ideal Wheel Co., Cincinnati, Ohio, a corporation of Ohio. Filed Nov. 10, 1911. Serial No. 659,638. (Curved spring spokes.) 12 claims.

1,059,026. Vehicle Wheel. Geo. D. Bulmer, Duquesne, Pa. Filed Oct. 19, 1912. Serial No. 726,734. (Curved spring spokes.) 1 claim.

1,059,050. Taximeter. Joseph William Jones, New York, N. Y., assignor, by mesne assignments, to Knickerbocker Trust Co., trustee, New York, N. Y. Filed Nov. 18, 1909. Serial No. 528,713. (Taximeter with operation controlled by indicating flag.) 25 claims.

1,059,103. Bolt for Internal-Combustion Engines. Douglas V. Ashley, Binghamton, N. Y. Filed March 9, 1912. Serial No. 682,722. (Cylinder-head bolts with drilled passages.) 9 claims.

1,059,109. Driving Mechanism for Automobiles. Levi W. Bogart, Trail, Okla. Filed Dec. 9, 1909. Serial No. 535,393. (Means for driving through steering wheels.) 1 claim.

1,059,115. Punctureless Vehicle-Tire. Phillip H. Calmus, Birmingham, Ala. Filed July 10, 19011. Serial No. 637,799. (Tire with recesses in inner side filled with air-cushions.) 1 claim.

1,059,122. Cushion Tire for Vehicles. John Dana, Burwell, Neb. Filed June 13, 1912. Serial No. 703,532. (Spring studs for tires.) 1 claim.

1,059,128. Tire Tool. Charles S. Edwards, Prineville, Ore. Filed March 12, 1912. Serial No. 683,365. (Screw-and-lever tire removing tool.) 13 claims.

1,059,158. Motor Disk Plow. John M. Henton, Edgemont, S. D. Filed May 14, 1912. Serial No. 697,181. (Motor disk plow with disks driven by motor.) 3 claims.

1,059,175. Valve-Grinder. Samuel S. Liverey, Bowling Green, Ohio. Filed Aug. 20. 1912. Serial No. 716,054. (Tool for oscillating valves for grinding purposes.) 3 claims.

1,059,182. Tire Chain. Douglas J. Martin, New York, N. Y. Filed July 15, 1911. Serial No. 638,634. (Non-skid of endless chains with spring connectors.) 14 claims.

1,059,183. Tire Chain. Douglas J. Martin, New York, N. Y. Filed Sept. 25, 1911. Serial No. 651,194. (Non-skid of endless chains with wire loop connectors.) 6 claims.

1,059,194. Vehicle Wheel. Bertie B. Moss, Salem, Ind., assignor of one-fourth to Gus Sims and one-fourth to Joseph Lennes, Indianapolis, Ind. Filed July 21, 1910. Serial No. 572,975. (Quick detachable tire rim.) 1 claim.

1,059,207. Pneumatic Tire and Armor Therefor. James A. Posey, Waxahachie, Tex., assignor of one-half to John E. Dunaway, Waxahachie, Tex. Filed Sept. 10, 1912. Serial No. 719,627. (Pneumatic tire with heavy protecting tread member.) 1 claim.

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World's Fastest 500
Miles in Competition

Be more than a "dealer"

You are more than a "dealer" when you are a *National* Dealer. You become a member of the *National* family; an integral part of the great *National* sales organization. We take you into our confidence, we work for you and with you. You are as much a part of our organization as though you moved your desks into our factory offices.

First, we give you a guarantee that cannot be surpassed, a guarantee of good faith and reliability based on the quality of our cars and our reputation for dependable business methods.

Second, we give you practical assistance and complete and permanent service. Not a service in name only, but an actual, concrete service, the value of which is demonstrated by the success of our present dealers and the fact that year after year they are glad to remain with this growing and here-to-stay organization.

We would like to have you visit our factory. Here you will learn, as many others have learned, how and why *National* cars continue to maintain their enviable position in the trade.

Our manufacturing methods and facilities are a revelation. We build for quality. The efficiency, care, skilled workmanship and high grade materials that combine to produce *National* cars set the standards for the world.

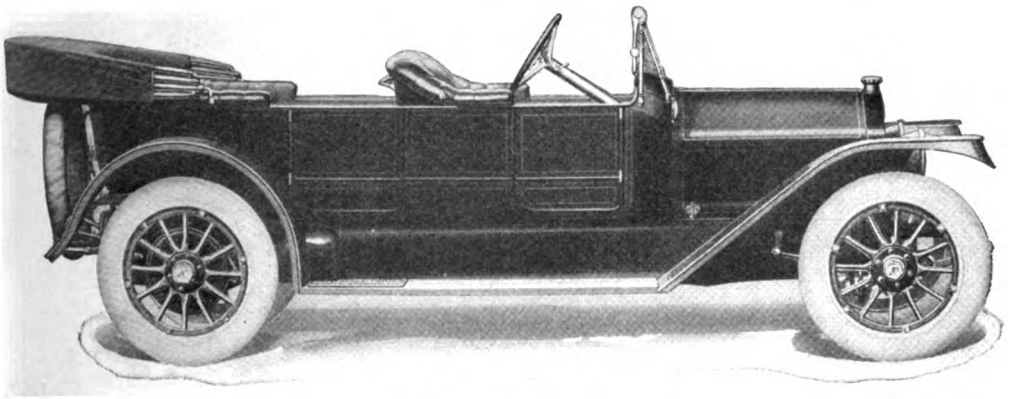
If you will write us at once and let us know exactly what day and what train you will arrive on, we will meet you with a *National* car. Now is the time to do your investigating for the coming season. You can't afford not to let us tell you about our proposition.

We are building for the future. Every one of our dealers is building a permanent, positive, money-making business, with a backing of satisfied customers who are always ready and willing to "boost."

Remember—the day has arrived for a greater popularity of the quality car; the inferior car has been tried and the educated public now demands the 100% reliable and capable machine.

The *National* in power, speed, reliability, comfort, convenience, flexibility of motor, beauty of design and noiselessness is the one car whose only superior is a better *National*.

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.



Five models, $2750 to $3400

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THE MOTOR CAR MFG. COMPANY

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MASTER OF THE ROAD

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Lenox Motor Car Co. ..... Boston, Mass.
Lexington Motor Car Co. ..... Connersville, Ind.
Little Motor Car Co. ..... Flint, Mich.
Locomobile Company of America ..... Bridgeport, Conn.
Lozier Motor Car Co. ..... Detroit, Mich.
Lyons Atlas Co. ..... Indianapolis, Ind.

M

W. H. McIntyre Co. ..... Auburn, Ind.
McLaughlin Motor Car Co. ..... Oshawa, Ont.
Marathon Motor Co. ..... Nashville, Tenn.
Marion Motor Car Co. ..... Indianapolis, Ind.
Maritime Motor Car Co., Ltd. ..... St. John, N. B.
Martin Carriage Works ..... York, Pa.
Martindale & Millikan ..... Franklin, Ind.
Mason Motor Car Co. ..... Waterloo, Ia.
Maxwell Motor Car Co. ..... Dayton, Ohio
Mercer Automobile Co. ..... Trenton, N. J.
Meteor Motor Car Co. ..... Shelbyville, Ind.
Metzger Motor Car Co. ..... Detroit, Mich.
Mitchell-Lewis Motor Car Co. ..... Racine, Wis.
Moline Automobile Co. ..... East Moline, Ill.
Motor Car Mfg. Co. ..... Indianapolis, Ind.

N

Nance Motor Car Co. ..... Philadelphia, Pa.
National Motor Vehicle Co. ..... Indianapolis, Ind.
Nordyke & Marmon Co. ..... Indianapolis, Ind.
Norwalk Motor Car Co. ..... Martinsburg, W. Va.
Nova Scotia Carriage Co. ..... Kentville, N. S.
Nyberg Automobile Works ..... Anderson, Ind.

P

Packard Motor Car Co. ..... Detroit, Mich.
Paige-Detroit Motor Car Co. ..... Detroit, Mich.
Palmer & Singer Mfg. Co. ..... Long Island City, N. Y.
Paterson Wagon Works ..... Flint, Mich.
Peerless Motor Car Co. ..... Cleveland, Ohio
Pilot Motor Car Co. ..... Richmond, Ind.
Pope Mfg. Co. ..... Hartford, Conn.
Premier Motor Car Co. ..... Indianapolis, Ind.
Pullman Motor Car Co. ..... York, Pa.

R

Regal Motor Car Co. ..... Detroit, Mich.
Renault-Frerers Selling Co. ..... New York City
Reo Motor Car Co. ..... Lansing, Mich.
Reo Motor Car Co. of Canada ..... St. Catharines, Ont.
Russell Motor Car Co. ..... W. Toronto, Ont.

S

Sayers & Scoville Co. ..... Cincinnati, Ohio
Seagrave Co. ..... Columbus, Ohio
Selden Motor Car Co. ..... Rochester, N. Y.
Simplex Automobile Co. ..... New Brunswick, N. J.
A. O. Smith Co. ..... Milwaukee, Wis.
South Bend Motor Car Works ..... South Bend, Ind.
Spaulding Mfg. Co. ..... Grinnell, Ia.
Speedwell Motor Car Co. ..... Dayton, Ohio
Stafford Motor Car Co. ..... Kansas City, Mo.
Stanley Motor Car Co. ..... Newton, Mass.
Staver Carriage Co. ..... Chicago, Ill.
F. B. Stearns Co. ..... Cleveland, Ohio
Stegeman Motor Car Co. ..... Milwaukee, Wis.
Sternberg Mfg. Co. ..... Milwaukee, Wis.
Stevens-Duryea Co. ..... Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell) ..... Dayton, Ohio
Studebaker Corporation ..... Detroit, Mich.
Stutz Motor Car Co. ..... Indianapolis, Ind.

U

U. S. Carriage Co. ..... Columbus, Ohio

V

Vandewater & Company ..... Elizabeth, N. J.
Velie Motor Vehicle Co. ..... Moline, Ill.

W

Wayne Works ..... Richmond, Ind.
Webb Co. ..... Allentown, Pa.
Westcott Motor Car Co. ..... Richmond, Ind.
Wichita Falls Motor Co. ..... Wichita Falls, Tex.
Willys-Overland Co. ..... Toledo, Ohio
Winton Motor Car Co. ..... Cleveland, Ohio

Z

Zimmerman Mfg. Co. ..... Auburn, Ind.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

(41)

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NEW DEPARTURE BALL BEARINGS

American-Made for American Trade



The Proof of the Bearing Is In Its Service

The garage man knows better than anybody the comparative service merit of the bearings installed in motor cars he cares for and repairs.

We recently sent out letters to garage men throughout the country, asking them their opinion of New Departure Ball Bearings, based on their experience with it.

The complete summary of all responses received the first week shows that 96 per cent. of the garage men who have been using New Departures found them absolutely satisfactory. Many of them went as far as to say that it has proved superior to all others.

This remarkable evidence of the quality and efficiency of New Departure Ball Bearings is absolutely indisputable. Users of foreign-made ball bearings, whether garage men or manufacturers, should give this American-made bearing a thorough trial.

Every manufacturer, purchasing agent, superintendent, and designing engineer should have the Engineering Edition of the New Departure Ball Bearing Catalog and the brochure on "Bearing Friction and Its Elimination."

Every garage proprietor and superintendent should have the new Ball Bearing Garage Manual, now in its third edition. Either one, or all of these books, will be sent free on request. Drop us a line now.

THE NEW DEPARTURE MFG. COMPANY

BRISTOL, CONNECTICUT

Western Branch: 1016-17 Ford Building, Detroit

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Made to fit any engine-any thread

ACCEPT NO SUBSTITUTE

Insist Upon The

RED TAG



IT GUARANTEES

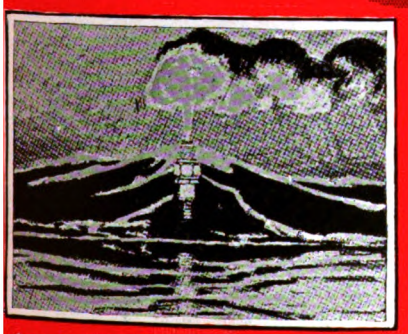
PACKED IN THIS BOX & TAGGED FOR YOUR PROTECTION

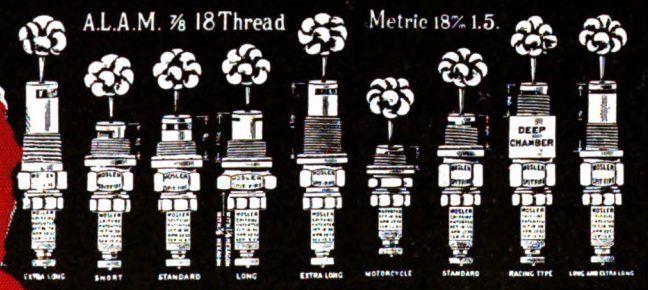
Genuine Platinum Point Guaranteed Forever

Mosler Vesuvius Plug

Energetic Ignition

Greater Power





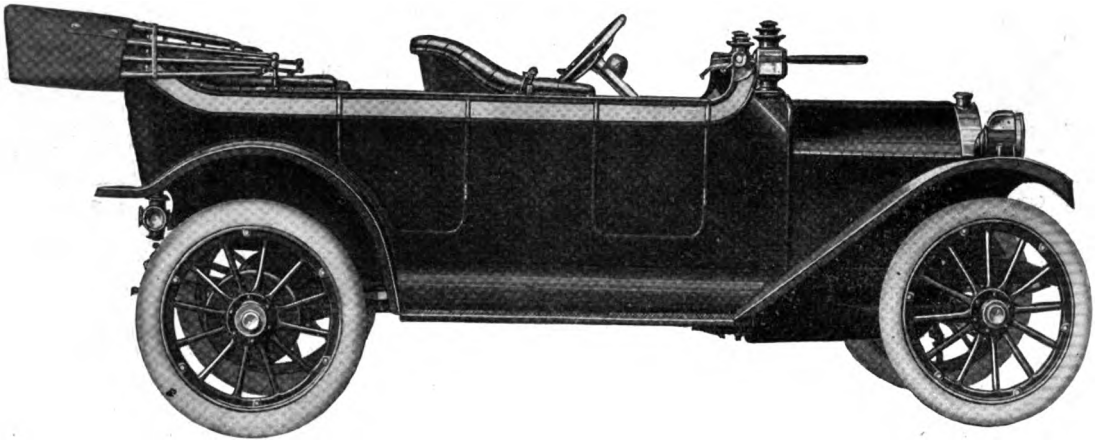
SOLD BY THE LEADING DEALERS

LIKED BY EVERYBODY

Absolutely Gas Tight
Has No Equal
For Speed and Power
Can Be Taken Apart Easily
Reassembled Absolutely Gas Tight
Stone-Insulated Plug Par Excellence
Will Outlast Your Motor

A. R. MOSLER & CO.,
P.O. BOX "M"
MT. VERNON, N.Y.

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Detroiter

Every Dealer in the United States Will Shortly Receive a Noteworthy Document Concerning This Remarkable Car

The things the Detroiter has accomplished within the past few seasons ought to be known to every dealer in automobiles. They are the shining proof of what all manufacturers have felt, though but few have put in practice—namely, that a "no season" automobile is the squarest deal that can be offered a purchaser.

In lots of a thousand, the Detroiter goes through the factory—each thousand lot an up-to-the-minute car.

On the thousand lot just starting, will be certain new features. These features will be described in the document every dealer may look for within the next few days.

They are additions that make the Detroiter—with its nine big fundamental features, such as the full-floating rear axle and platform rear spring—still the "best selling car of its class in the world."

IT WILL MORE THAN PAY YOU TO GIVE YOUR BEST ATTENTION TO THIS DOCUMENT WHEN IT REACHES YOU.

$900

BRIGGS-DETROITER COMPANY

449 Holbrook Avenue **Detroit, Mich.**

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THE TRUTH FROM ENGLAND

"Centrifugal Speedometer is Popular Favorite"

Reproduced from Motorcycle Illustrated

...been invaluable. ...motorcycles not ... TOMMY ... TIP ... motorcycles. They will ... (D... Wash- ... ...ke ... ...ound ... quicker ...

HOW A CENTRIFUGAL SPEEDOMETER WORKS.—"Some of your readers may be aware that the centrifugal speedometer is the popular favorite in England without knowing exactly how it works," writes our correspondent, The Britisher. "The heart of the mechanism consists of a vertical spindle about 4 inches long, which runs in ball-bearings top and bottom, and is rigidly keyed or otherwise attached to the driving shaft from the front wheel. Halfway up this spindle a small, white metal flywheel floats loosely on two tiny axles. The flywheel is coupled by a small side-link to a bronze collar, which is free to slide up and down the vertical spindle, but is normally pushed up towards the top of the spindle by a light coiled spring.

"When the machine gets on the move, this vertical spindle is rotated by means of the gearing on the front hub, and the driving shaft attached thereto. The faster the machine goes, the faster the spindle spins; and the faster the spindle spins, the more the flywheel or "white" tends to flatten out and run in a horizontal plane, due to centrifugal force. Of course, as the 'white' runs flatter and flatter, its side-link pulls down the sliding collar. The flanges of the sliding collar grip and pull down a rod which operates the needle on the dial of the speedometer by means of a toothed rack. A small pinion on the tip of the vertical spindle drives the mileage disc by means of clockwork, giving a reduction of between 3,000 and 4,000 to 1."

The centrifugal speedometer, unlike the magnetic type, is not affected by changes in temperature.

It is just as accurate during the zero of Christmas as during the torridity of July.

That explains in a measure the reason for its world-wide popularity—the reason why the

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

is rapidly winning general appreciation here.

It is simple in construction, yet more sensitive to speed variations than any other.

It registers low mileage as well as high.

In some speedometers, the indicator hand shows practically no action until a speed of from 8 to 10 miles has been attained.

The indicator is so adjusted that there is no "wabbling" or oscillation of the hand.

Every CORBIN-BROWN SPEEDOMETER is calibrated by hand and tested to absolute accuracy before being sent out.



Sold by Leading Dealers Everywhere. Write for Catalog

CORBIN SCREW CORPORATION

THE AMERICAN HARDWARE CORPORATION, Successor

NEW BRITAIN, CONN.

BRANCHES: NEW YORK CHICAGO PHILADELPHIA

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Oakland

"THE CAR WITH A CONSCIENCE"

GROWING

¶ The history of the Oakland Motor Car Company has been a steady climb upward.

¶ Starting in a small way in 1908, the business has increased steadily year after year until, for the fiscal year ending July 31, 1913, the gross receipts amounted to over ten millions of dollars.

¶ We have been able to make this progress because we have built honest, serviceable automobiles.

¶ A company cannot thrive unless it does.

¶ In this commercial age, dealing as we do, with a keen public, it is absolutely necessary to make every purchaser an "asset"—a satisfied customer who is willing to freely recommend his choice to his friends.

¶ Good will is a priceless thing to have.

¶ The Oakland has it.

¶ "Fours" and "Sixes." Different body designs. Prices $1150 to $3600.

¶ Send for a catalog.

Oakland Motor Car Company

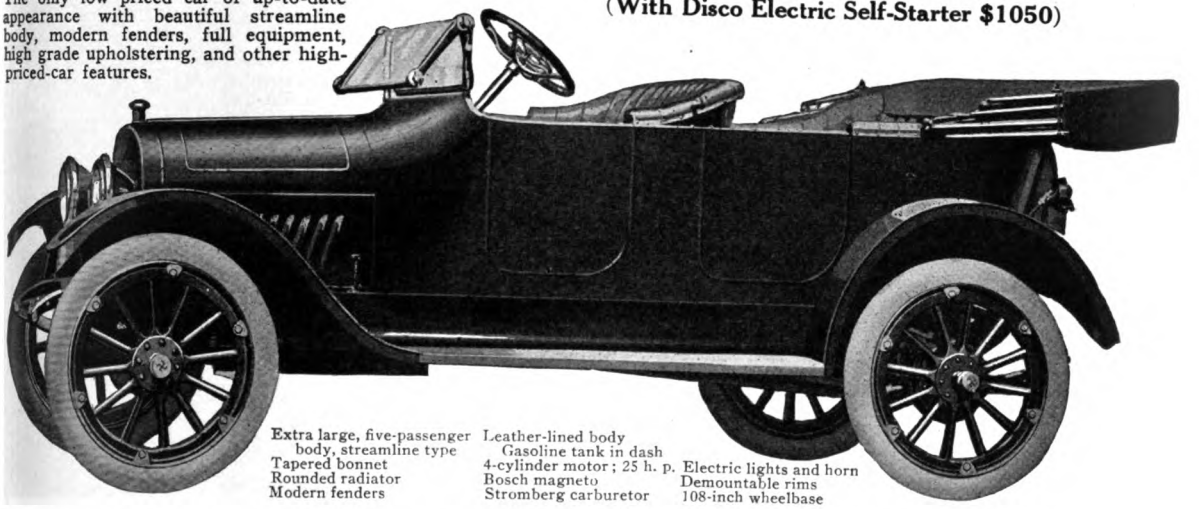
Pontiac, Michigan

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The New KRIT $950

The only low priced car of up-to-date appearance with beautiful streamline body, modern fenders, full equipment, high grade upholstering, and other high-priced-car features.

(With Disco Electric Self-Starter $1050)



Extra large, five-passenger body, streamline type
Tapered bonnet
Rounded radiator
Modern fenders
Leather-lined body
Gasoline tank in dash
4-cylinder motor; 25 h. p.
Bosch magneto
Stromberg carburetor
Electric lights and horn
Demountable rims
108-inch wheelbase

Up-to-the-minute style and quality with "light car" running expense

HERE IS A COMBINATION that the motorist of today is demanding.

BUT NO CAR IN THE PAST has fully met this demand. If it had all the modern features, its cost was higher than many people wanted to pay. If its price was low, it lacked the quality, style and appearance.

For 1914, however, the New KRIT absolutely meets this big demand. It has beauty of appearance, elegance of style, strength without unnecessary weight, standard mechanical features—and all at a low price—$950 (with Disco electric starter, $1050).

A Car That People Want

THAT THE NEW KRIT will be a big seller is already assured. Dealers who have seen it are enthusiastic. To those who have not seen it the picture above will give some idea of its beauty, size and "class."

THE GENERAL LINES of the car are strikingly similar to the 1914 models of well-known cars selling from $2,000 to $3500. High-priced-car-practice has been followed in the leather lined body; the cork-linoleum covered, nickel-bound floor boards and running boards; the gasoline tank in the dash; the fine electric lights (including combination license bracket and tail light); the dash control board; and many other features of refinement.

THE MECHANICAL FEATURES of this remarkable KRIT read like a list of specifications for any one of the high-priced 1914 cars. The basic design of the motor has not been changed in four years of successful manufacture. Advanced methods and improved materials have enabled us to lighten our pistons and connecting rods without sacrificing strength. Light weight and accurate balance eliminates vibration. No 4-cylinder motor in the world is quieter or runs more smoothly than ours.

Five Years of Satisfaction

KRIT CARS FOR YEARS have been known as reliable, serviceable automobiles. KRIT cars sold five years ago are still running satisfactorily. Records of 25,000, 50,000 and even 100,000 miles of use in owners' hands have demonstrated their mechanical soundness.

You Saw This Happen

WE BELIEVE THIS CAR presents a selling opportunity not equalled since 1908. History is repeating itself. Five or six years ago manufacturers brought out $1500 cars with features previously found only on the high priced automobiles. There was a tremendous demand. Far-seeing dealers who appreciated what was happening laid the foundations for comfortable fortunes.

SINCE THEN THE INDUSTRY has developed in two ways—"prices down" and "prices up." Today more and more of the best automobile buyers want the "prices up" features but at the "prices down" figures. The 1914 KRIT is the answer.

Reasons for KRIT Value

FIRST OF ALL KRIT cars are economically manufactured. Our overhead is low. We haven't a staggering investment in buildings and equipment. Many of our parts are made by allied companies who make them according to our own design and subject to rejection if not up to our specifications.

OUR OUTPUT IS large enough to take advantage of discounts in buying material and parts, but not so large that we cannot give the utmost care in manufacturing and inspection.

Our Policy

OUR POLICY FOR 1914 is to build a conservative number of cars; to contract with our dealers for the number they can sell—and the number we can deliver to them.

OUR COMPANY has steadily gained strength every year and is now in the best position in its history to help its dealers make a big success. The KRIT Company is thoroughly sound and stable, amply financed to take care of the output we propose to build; well organized; well managed. And we are furnishing our dealers the ***best*** car ever produced in the low priced class.

KRIT DEALERS are high class dealers. We want more of them. We want direct representation in many places where we now have sub-dealers. Some of our larger distributors have places in their territory which need to be more closely worked.

WITH THE SPLENDID NEW KRIT model, a well equipped manufacturing organization, and a vigorous forward sales policy, the KRIT line for 1914 offers to dealers a big opportunity of quick sales and permanent business.

WRITE US TODAY for full information and dealers' proposition. Come to the factory and see the New KRIT. Act today before your competitor does.

KRIT MOTOR CAR COMPANY, Detroit, Mich.

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Hyatt Roller Bearings require no delicate adjustments after the car has left the factory.

Many adjustable bearings are totally ruined by being improperly adjusted by inexperienced users.

Once installed and given a little lubrication now and then, Hyatt Roller Bearings will give a carefree service that is unequalled.

A book on Motor Car Bearings—another for Automobile Owners will be sent for the asking

"Hyatt Quiet Bearings"



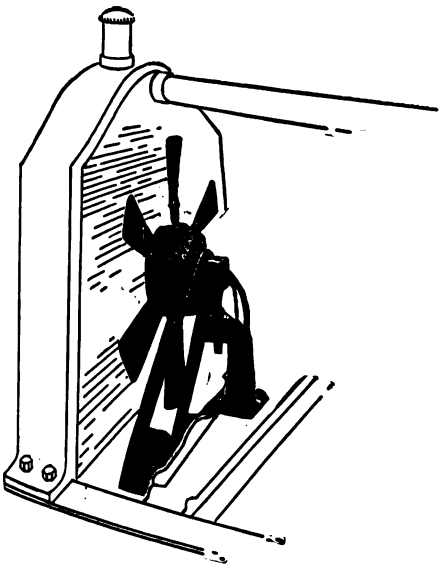
HYATT ROLLER BEARING CO.
DETROIT, CHICAGO
NEWARK, N.J.

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What owners have been wanting

Kemco

Fan Type Generator



KEMCO GENERATOR MOUNTED ON CAR

A GENERATOR with fan blades that can be installed in an hour without tearing down the car. Waterproof and dustproof. Can be put on any make of car at less cost than other generators. Your old fan comes out. A KEMCO generator, with fan attached, goes in its place.

THE KEMCO generator weighs only four pounds more than the standard fan. It charges batteries and gives ample current for electric lights. Requires little power. Send for descriptive matter.

We Want Representatives

WE have received hundreds of inquiries from owners all over the country. We need representatives to install KEMCO generators and act as our agents. If you are interested in making money, write for our proposition. It means money to you. Use the coupon.

The Kemco Electric Mfg. Co.
CLEVELAND, OHIO

CUT OUT THE COUPON AND MAIL TODAY

KEMCO ELECTRIC MFG. CO., Cleveland, Ohio.

Gentlemen: Please send me full information regarding the Kemco Fan Type Generator, together with your agents proposition.

Name .....

Street .....

City .....

State .....

My business is.....

(81) M. W.

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Stewart Hub Odometer



You have got to have an Odometer on your truck

THE Stewart Hub Odometer is one of the most important parts of a motor truck. It is ready every minute to tell the exact number of miles your truck has been driven. You must know this in order to figure the cost per ton mile. You must know the ton mile cost in order to learn whether your truck is making or losing money.

An instrument less accurate would do you more harm than good. The Stewart Hub Odometer is truth itself. It cannot go wrong. It is positive gear driven—far less complicated internally than your watch, and far more dependable. There are no trouble-breeding springs, pawls and ratchets in its makeup. It is more durable than the truck itself.

Without the Stewart Hub Odometer you would operate your truck hit-or-miss. You would not know whether it was running at a loss or a profit until your books told you at the end of the year. The Stewart tells you at once and all the time.

Whether you operate gasoline trucks or electrics, ***know the truth about them.*** Know ***in time*** when the cost is soaring. Then look into loading, routing, stops and other details for the reason, and set it right.

The Stewart Hub Odometer costs but $15.00—much less than the cost of making mistakes in one month alone. It ought to play its part on your motor truck from the first day.

Be sure to specify the Stewart Hub Odometer by name on your order, and start your trucks in service fully equipped.

See that the trucks you buy are equipped with Stewart Hub Odometers.

The Stewart Speedometer Factory

1949 Diversey Boulevard

CHICAGO, ILLINOIS

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Four or Five Combination, Phaeton, Touring Body Type,

$2975

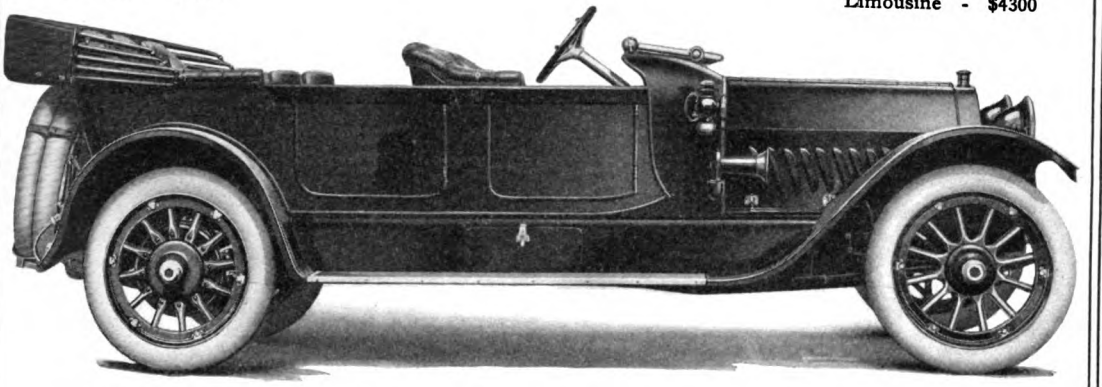
Seven Passenger Touring Body, $175 extra.
Limousine - $4300

Oldsmobile 1914

Four or Five Combination, Phaeton, Touring Body Type,

$2975

Seven Passenger Touring Body, $175 extra.
Limousine - $4300



Seven Passenger Touring Car, Model 54

Lower in price, and even higher in quality, than any of its predecessors—the Model 54—1914 Oldsmobile—is creating more concrete evidence of live dealers' interest than any other high grade six on the market.

THE PRICE

$2,975 practically eliminates competition with dealers handling cars priced from $4,000 to $5,000—for the Oldsmobile is as good as any of these. The lines of this car are of distinctive Oldsmobile design—a standard which has led all competition, whatever the price.

WE ARE SIX CYLINDER PIONEERS

Oldsmobile pioneered the six-cylinder motor, and it is unnecessary to dwell on the value of the years of ripe experience in the manufacture of six-cylinder cars—which is back of the Model 54. The Oldsmobile unit power plant 3-point suspension (bore 4¼, stroke 5¼), is a wonderful piece of machinery.

MATTERS OF COMFORT, UTILITY AND REFINEMENT

We learned how to build comfort into the Oldsmobile in the early days of the industry. If we knew of any better equipment or little matters of refinement than are on the Model 54 we would be the first to install them; but we have put everything into this car that spells utility, comfort and refinement.

Here are a few of the equipment details: The very latest and improved Delco system of self-starting, lighting and ignition. Noil motor driven tire pump. Combination electric and oil side and tail lamps, special Oldsmobile design. Special design Oldsmobile electric head lamps. Special design three-way adjustable ventilating windshield. Top, boot, and patented adjustable side curtains—60 miles speedometer. Adjustable stem setting and winding Waltham clock. Rear tire irons, capacity for two tires. Demountable rims, one extra. Imported horsehair tonneau mat. Electric light in tonneau. Extension electric trouble lamp.

PROMPT DELIVERIES

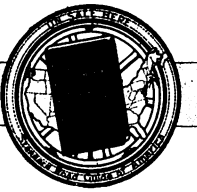
Never in the history of this Company have we been so well prepared to take care of our dealers by prompt shipment of cars as ordered. We began the delivery of our new models August first, and each day sees the regular quota of cars coming through the factory, tested and inspected down to the minutest detail, on schedule time. You can absolutely count on all delivery promises being adhered to rigorously.

WRITE US AT ONCE

In a short while, orders for all cars available for the coming season will be closed, and we shall be unable to go beyond this point. We urge, therefore, that if you wish to sell a car that measures up to the highest standards of quality, workmanship and design, you write us at once, letting us know your prospects, size of territory desired, and your facilities for properly representing the Oldsmobile line.

OLDS MOTOR WORKS, LANSING, MICHIGAN

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How Often Do Passing Tourists Stop and Ask You the Way?

Every place of business should have handy a copy of the

Automobile Blue Book

Get people in the habit of coming to your store or garage for road information and they will follow the habit and buy things from you.

The greatest touring months are now coming and all the 1913 books are here in stock ready for immediate shipment.

Get Yours Today

Sent prepaid on receipt of $2.50 per volume

Vol. 1—New York State and Adjacent Ontario.
Vol. 2—New England and Coast Provinces.
Vol. 3—New Jersey, Pennsylvania and Southeast.
Vol. 4—The Middle Western States.
Vol. 5—From the Mississippi to Pacific Coast.

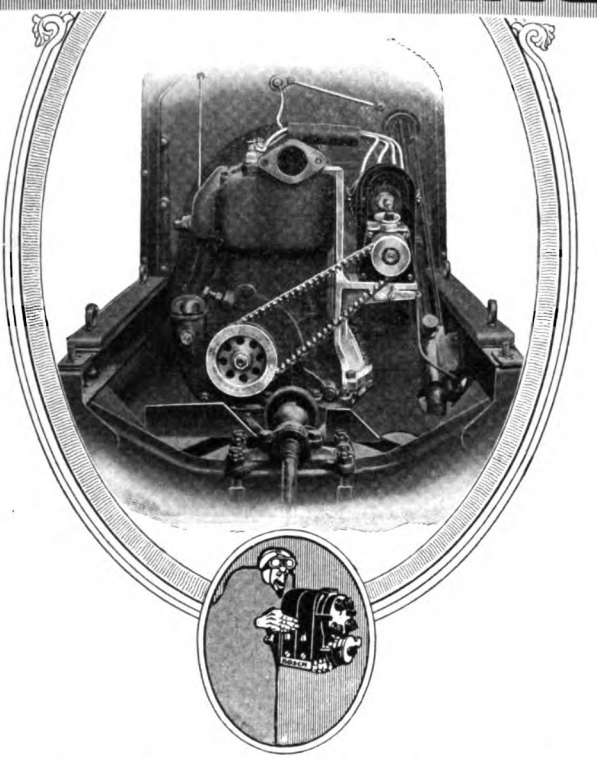
Motor World Publishing Company, 1600 BROADWAY NEW YORK



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BOSCH-FORD ATTACHMENT

A
Bosch Magneto
For Ignition



The
Ford Generator
For Lighting

More Efficiency for Fords

THE EFFICIENCY OF AN ENGINE depends upon its ignition system. The most capable ignition system was found many years ago: it is the Bosch Magneto; used by all prominent makers of high grade cars.

THE BOSCH-FORD ATTACHMENT makes it possible to easily install the Bosch Magneto on Ford cars, it results in a positive betterment of the car, smoothness of operation, maximum speed, extra power and even greater economy in upkeep. Pre-ignition and overheating are eliminated.

AND YOUR GUARANTEE: The magneto and all fittings are productions of the Bosch Magneto Co., internationally known as makers of Quality Products of the highest grade—the kind that satisfy.

This is an exceptional opportunity for the trade
Complete literature sent on your request

ATTENTION!—The fastest time ever made in a prominent American Hill climb was made by a Bosch-Equipt Ford—Of Course.

Bosch Magneto Company
224 West 46th Street, New York

Chicago Detroit San Francisco Toronto

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oss-Rolled Steel
Long-lived Springs

Cleveland-Canton Automobile Springs

It means the utmost in safety, astounding strength and greater resiliency, for such steel will stand more severe strains than ordinary steel.

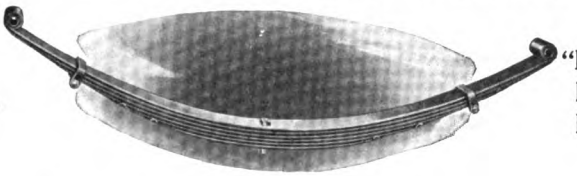
With improvements in tires, in motors, in starting systems, now comes a startling improvement in springs.

Cleveland - Canton "Chrome - Vanadium" Springs are made by the "cross-rolled" method. The material is worked both longitudinally and transversely, then heat-treated in oil.

It is not a cheap process, but it adds immeasurably to the life of a car. It means fewer repairs, less depreciation, freedom from engine racking and jolting.

Cross-Rolled Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

Cars equipped with poor springs soon gain a bad name among motorists. For the vibration, bumping and jolting quickly sends engines to the repair-shops.

Because makers realize this, more and more cars are being equipped with Cleveland-Canton "Chrome-Vanadium" Springs, which give utmost elasticity, absorbing shocks and protecting the car and its occupants from shaking and vibration.

Cleveland - Canton "Chrome - Vanadium" Springs are specified on the leading cars this year. They are built for enduring service—they are the **springs you should have on your car.** *In five years not one Cleveland-Canton "Chrome-Vanadium" Spring returned because of breakage or settling.*

Send us your blue-prints and let us figure with you. You will learn facts of utmost importance to you.

Best Grade—"Chrome-Vanadium"
Next Best—Special Analysis

The Cleveland-Canton Spring Co.
Canton, Ohio, U. S. A.

ELAND MARK
NTON

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This steering-arm of a Timken-Detroit Front Axle was bent into a circle by a powerful testing machine to prove that the steel is so tough it will never break in service.

There's Safety in Steering Arms That Stand Tests Like This

THERE'S safety in axles designed to meet the *maximum* stresses of every day travel with a *big margin to spare*—built of materials so good that, if accident does bring strains beyond what the axles should bear, they will *stand right up to the last ounce of pressure and the last severe shock*—then *bend* but not break.

It requires terrific blows and tons of pressure, in special test machines, to bend these axle parts, to prove that they are tough and strong, *but not brittle.*

And it is because Timken-Detroit Axle parts, are so tough that they *can* be bent twisted and flattened, cold, *without breaking* that the man who rides on Timkens *can confidently count on riding safely.*

There are no more important parts in your car than the axles and their bearings. Why this is so is told in the Timken Primers T-5 "On the Anatomy of Automobile Axles" and T-6 "On the Care and Character of Bearings." Sent free, postpaid, from either address below.

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.
THE TIMKEN ROLLER BEARING CO., CANTON, O.

TIMKEN
AXLES & BEARINGS

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INVADER OIL



To Tell the Truth—

¶ INVADER OIL ***will*** leave a carbon deposit. So will every other oil.

¶ INVADER OIL ***will*** smoke when it burns. So will every other oil.

¶ When INVADER OIL is used it ***may be*** necessary to grind valves. Such certainly would be the case with every other oil.

¶ A motor using INVADER OIL ***can*** overheat. So it can when any other oil is used.

¶ A machine exclusively lubricated with INVADER OIL will eventually wear out. This would also be the case no matter what oil was used.

¶ INVADER OIL is ***not*** a perfect lubricant,—neither is any other oil. There is no such thing.

¶ INVADER OIL, however, is chemically superior to all other oils. It will deposit ***less*** carbon, — make ***less*** smoke,—mean ***less*** grinding of valves,—make a motor ***less liable*** to overheat, and will cause the machine using it to last ***longer*** mechanically than would be the case were ***any*** other oil used.

¶ Remember that the superiority which is indicated by its better tests is a superiority which cannot be contradicted. INVADER OIL is better because its tests are better. There is no way of avoiding this fact.

Territorial Agents are in a position to fill orders as promptly and at the

INVADER

Lessees of Chas.

Main Office, 81 Broad

New York City

FACTORIES:

NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:

BOSTON.....284 Columbus Ave.
WASHINGTON.....512 Kenois Bldg., 11th and G Sts., N. W.
PHILADELPHIA.....113 Arch St.

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I-O-C GEAR OIL

Puts Noisy Gears to Sleep

¶ I-O-C GEAR OIL is the only oil ever made especially and exclusively for the lubrication of automobile transmission gears.

¶ It is absolutely different from any other oil made and possesses certain peculiar properties that cause it to face the gear teeth with a coating which is practically indestructible and prevents wear and reduces noise and friction to a minimum.

¶ It contains no foreign matter, such as ground cork, sawdust, etc., but is 100 per cent OIL, and being free from water and chemicals it will not foam in the case when running or allow the bearings to rust when idle.

¶ Remember, it is only the OIL which a grease contains that has any lubricating value. I-O-C GEAR OIL is not only all oil, but it's the only oil that will eliminate the hum or grind of metal gears.

A 10-LB. CAN COSTS $1.50

¶ A trial will convince the most skeptical that I-O-C Gear Oil is better than any grease, any dope, any compound, or any other form of gear lubricant ever put on the market.

ime prices as the main office, or any branch of the Invader Oil Co.

OIL COMPANY

. Kellom & Co.

Street, New York

ranch, 1906 Broadway

TERRITORIAL AGENTS

W. D. Newerl Rubber Co. [949 S. Main St., Los Angeles, Cal. [589 Mission St., San Francisco, Cal.
Union Motor Car Co. ..... Tacoma, Wash.
Boyer-Campbell Co. ..... Detroit, Mich.
Beck & Corbitt Iron Co. ..... St. Louis, Mo.
Motor Car Supply Co. ..... Chicago, Ill.
Lee Hardware Co. ..... Salina, Kan.
American Lubricating & Supply Co., Kansas City, Mo.
James Bailey Company ..... Portland, Me.

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street **NEW YORK CITY**



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1604 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 428 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 12 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. G. Bruggemann, Moscow; Y. Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Melvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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OUR departments of engineering and design co-operate with the men who build the car—combining their weight of experience in radiator making with the particular requirements of the designer of the automobile.

We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

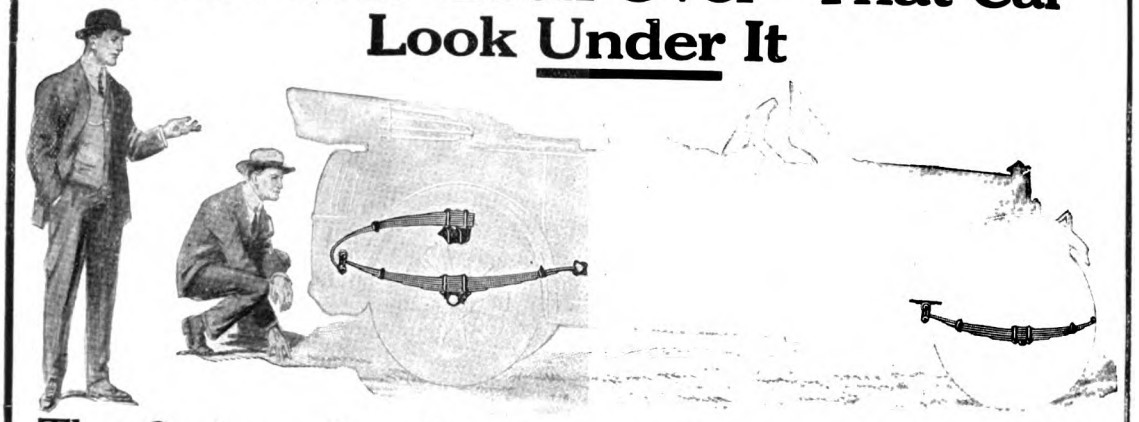
Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky inefficient radiator and a "superheated" customer, then be sure this car was *not* equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

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When You "Look Over" That Car Look Under It



The Springs Are "At The Bottom" of Any Car's

Comfort—Safety—Service

Naturally—super-excellence in springs entails a little greater investment. But—we are not offering a way to cheapen a car's *first* cost.

It's a way to greater car comfort—to greater security—to economy of up-keep—to saving of wear on the delicate propelling mechanism.

The insurance against accidents is worth more than the additional cost. Add to that the higher efficiency in saving car repairs, and insistence upon Detroit Springs in your car's equipment is only a wise precaution. Moreover—specifying Detroit Springs costs the car-buyer nothing. And though it costs the car manufacturer a little more—ultimately the builder of the car benefits as well as the buyer.

RESILIENT Detroit Springs SILENT—SELF-LUBRICATING

Detroit Springs Are "Unhurriedly" Made

From the first chemical analysis of the famous steel that forms the basis of Detroit Spring *super quality* to the severe final test, every step in the 48 details of the Detroit Process is slowly and scientifically completed.

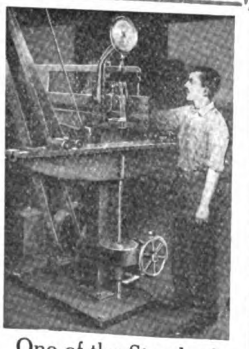
For example—our process of "nibbing" the leaves of the spring together takes time and entails costly carefulness. We could save costs by simply putting a bolt through the center of the spring. Ordinary springs are thus made. But to do so sacrifices the strength of the spring.

Similar care marks the finishing of the point where spring weaknesses usually first show up—the spring "eyes." These are the points subjected to the *severest wear*. Lack of care in "eye" or bushing finishing often makes a difference of three years in the duration of *silence* in the spring. All our eye-bushings are of special bronze—ground to a diamond smoothness.

The Spring that Won't Squeak

The new patented Detroit Spring Self-Lubricating Device consists of a distributing reservoir in each leaf, loaded with long-life lubricant.

The Spring That Is Guaranteed For *Two* Years



One of the Standard Tests that Insure Detroit Spring Serviceability

Under the "capacity test" every Detroit spring must carry a fixed load at a fixed height—never less. This machine sees to it that this infallible law of D. S. P. manufacture is never infringed.

Write for our new book, finely illustrated and printed, telling the fact-story of Detroit Springs.

Detroit Steel Products Co.
2258 E. Grand Blvd. Detroit, Mich.
Manufacturers of Fenestra Solid Steel Windows—"The Standard of Industrial Daylighting."

Tests That Try Detroit Springs As No Load Or Road Ever Could

The "Initial Test" forces the assembled spring down again and again to test the *permanence* of its resilience. This test is many times more severe than actual road-service ever would be. It enables us to guarantee the springs for years against "settling."

Then comes a test unknown in other factories—the "Hardness Test"—that determines absolutely the texture strength required by our engineers.

And, finally, the "Capacity Test"—so severe that most people say it is unnecessary. This tries the spring to the extreme possibilities of emergency shocks and strains while carrying the "dead load" of the car plus the passenger capacity.

You take no chances because *we* take none.

Look For the Lubricating Cup Near The End of Each Leaf And The Trade Mark

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Purchaser and Dealer Alike Profit in Every Stearns-Knight Sale

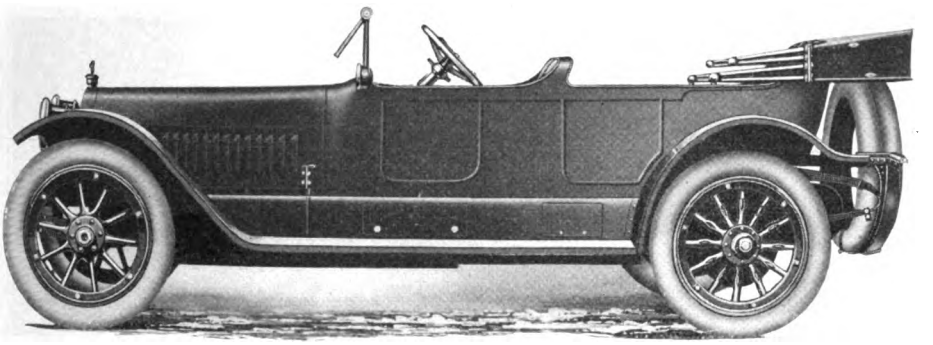
—the purchaser because his investment renders him maximum returns in satisfactory service with a minimum of upkeep and depreciation. The silent, vibrationless Stearns-Knight motor minimizes repairs and adjustments, and itself actually *improves with use.*

The dealer also profits by the owner's satisfaction—the latter's good will is a very real, if intangible, asset. Added to this is the immediate profit of the sale under the liberal Stearns contract, and the time-saving efficiency of the Stearns service organization.

Contracts are being closed for territory not previously allotted.

The F. B. Stearns Company

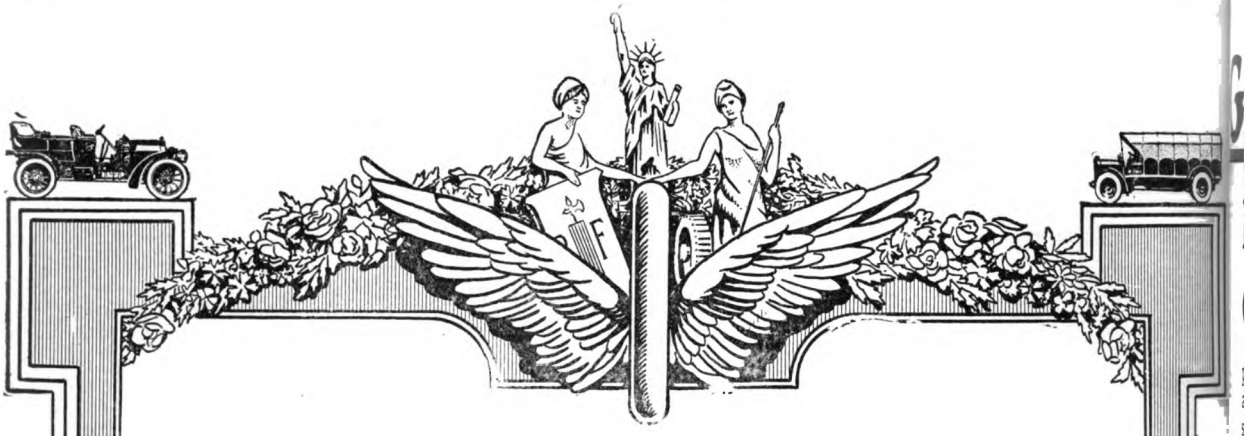
Cleveland Ohio



Stearns-Knight Six-Cylinder Six-Passenger Touring Car

This car is one of the new models added this year to make the Stearns-Knight line for 1914 even more complete than in previous years. The purchaser is allowed an exceptionally wide range of choice in body styles in either the four- or six-cylinder type—each attractive in its lines, superbly finished and luxuriously equipped.

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President Signs Underwood Bill Reducing the Duty on Tires by 25 Per Cent.

Write for Our

JOBBERS AND DEALERS PROPOSITION

Where we formerly paid Uncle Sam ten dollars on every tire we imported, we now only pay him three. This means seven dollars **per tire** saved for **YOU,** as we have decided to give the trade and public the entire benefit of the 25 per cent. **REDUCTION.**

THIS IS YOUR CHANCE

You can now sell champagne tires at beer prices! Chicago, Boston, San Francisco, Indianapolis, Denver, Detroit, Philadelphia and several important States still open.

GAULOIS TIRES

MADE IN FRANCE

GAULOIS TIRES

represent **the utmost** in **Mileage, Strength, Comfort, Resiliency** and **Durability.** There is absolutely nothing better made. The juries of fourteen International Expositions have said so.

Gaulois Tire Corporation

49 West 64th Street **NEW YORK**

Canadian Agency 325 St. James Street, MONTREAL

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Gilmer Rebound Strap

IT'S the car's rebound which breaks springs—not how hard it "hits bottom" on rough roadways.

Gilmer Rebound Straps

prevent rebounds. They are made in lengths to fit all types of cars and are strong enough to resist the rebound of heavy cars as well as light. Each strap is tested to resist over 5,000 pounds strain.

¶ Gilmer Rebound Straps are made endless (without a weak place or joints) and woven from the best grade Fibre Cotton Yarn, water-proofed and weather-proofed.

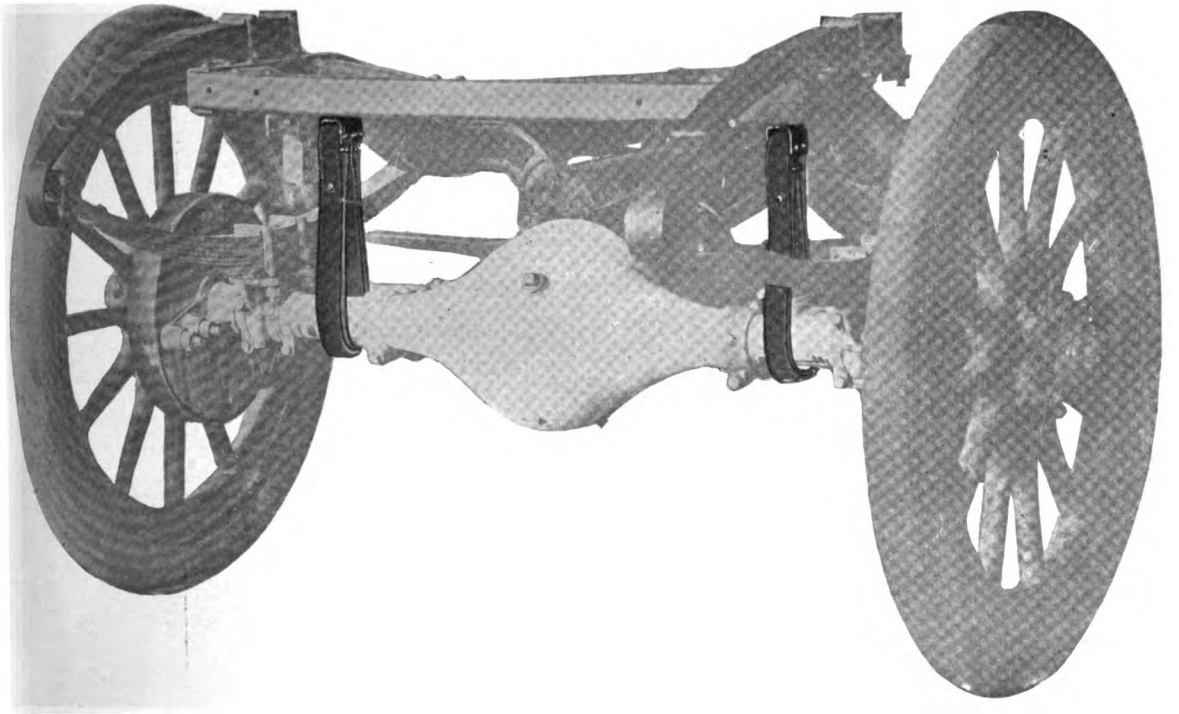
¶ A positive year-long guarantee goes with each set of Gilmer Rebound Straps sold.

¶ Packard, Premier, Cadillac, Hudson, Hupmobile, Marmon, Chevrolet and Cartercar are among the American-made cars that have adopted Gilmer Straps as standard equipment because of their insurance against spring accidents and because of their superiority over leather straps.

¶ The best shock absorber on the market finds an efficient helper, in case of severe roadwork, in Gilmer Straps.

¶ Be sure to get our dealers' proposition, for it opens up a way for nice profits, and the insurance of your customers against spring breakage.

L. H. Gilmer Company, 52 N. Seventh St. Philadelphia, Pa.



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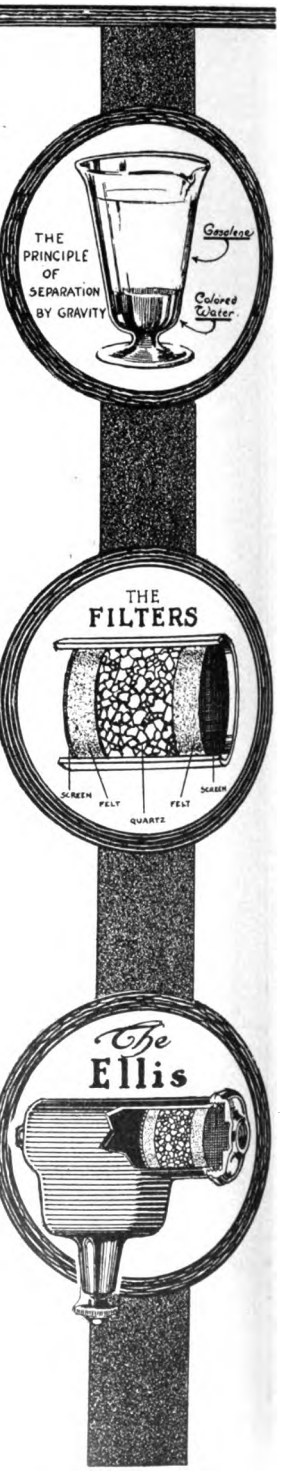
Carburetor(?)Trouble

A MALADY most motorists suffer from is called "carburetor trouble." To obtain temporary relief from "carburetor trouble" is a comparatively simple matter; why bother about the cost. But, relief is not remedy; now think about the cost of relief. Just as a capable physician first administers relief to a suffering patient and then sets about curing the cause of his patient's affliction, so must carburetor trouble be handled.

The Ellis Gasolene Purifier

provides an efficient and lasting REMEDY for carburetor trouble. A diagnosis of carburetor trouble shows that the big bulk of such trouble is caused by impurities, such as dirt, grit, sediment, water, etc., in the fuel. The causes are of two kinds, solid substances, some of them infinitely small, and water, which is impossible to distinguish from gasolene, but both kinds of impurities capable of causing trouble.

The Ellis, by a series of screens and filters, catches every particle of solid substance that may get into the fuel. The presipitation chamber on the under side of the Ellis traps every bit of water, by a very simple application of the gravity method of separation. A handy arrangement allows periodical draining the purifier of the impurities; just a few turns of the thumb screw. No more sensible way of combating trouble can suggest itself than that of eliminating the cause. No more efficient insurance against carburetor trouble has ever been devised than the Ellis Gasolene Purifier. Send for one to try on your demonstrator or service car. It will soon prove itself worth many times the $3.50, its list price. We can offer a very attractive proposition to dealers. Write for it.

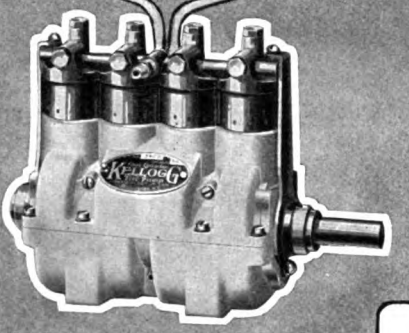


NATIONAL SALES COMPANY
45 Milk Street BOSTON, MASS.

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KELLOGG

FOUR CYLINDER AIR PUMP



The Selling Feature for 1914

In 1914 hand pumps must go. Car owners will no longer break their backs pumping tires or pay for continuous tire repairs caused by insufficient inflation.

The Kellogg Four Cylinder Air Pump is the selling feature for 1914. It is the standard tire pump. It has been used for years by the makers of the better cars—Packard, Peerless, Stevens-Duryea, Winton, Palmer-Singer, Stoddard-Dayton, Chalmers and many others. No other can boast our record.

Dealers and garages make money by installing the Kellogg Tire Pump. We are prepared to furnish attachments for equipping practically any car now in use.

Send for our book—"Air on Tap."

The Kellogg Mfg. Co., Main and Circle Sts., Rochester, N. Y.

New York
1733 Broadway

San Francisco
444 Market Street

Chicago
1112 So. Michigan Avenue

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HAYNES

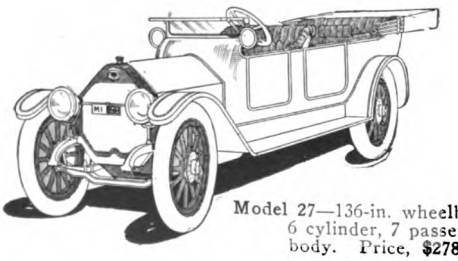
America's First Car

Is a Season Ahead In Improvements with the Vulcan Electric Gear Shift

The discriminating auto buyer is attracted to the Haynes like a magnet draws steel filings. He knows that another year will see a lot more cars adopting the electric shifting of the gears. That's why he's hunting up the Haynes dealer---hunting him up, mind you---and placing his order for the year-ahead Haynes.

The Wise Auto Buyer Is Looking for Just Such a Car as the Haynes

He deliberately looks for the car with the latest improvements. Improvements have been coming so fast, in the motor car industry, that not infrequently has a buyer of a new car made the startling discovery that the value of his car dropped 50% the minute it came into his hands. Why? Because new features were being brought out in other cars which were being demanded by the wise buyers of automobiles.



Model 27—136-in. wheelbase, 6 cylinder, 7 passenger body. Price, **$2785**

Without the Vulcan Electric Gear Shift

HAYNES

America's First Car

IS A WONDERFUL MACHINE

20 years of automobile engineering and constant improving, are embodied in the Haynes. It has a mechanical sturdiness and reliability that has been proved so often as to be a matter of record.

Year-in-advance equipment plus recognized reliability creates a combination that can't be beat.

No wise auto-buyer, of course, buys a car on the strength of one feature alone. But the Vulcan Electric Gear Shift in the Haynes car is backed by the strongest possible advantages in every other way.

Back of the Vulcan Electric Gear Shift is the greatest line up of advantages ever put into an automobile.

Specifications of the New Haynes

Motor—Bore 4¼ in., Stroke 5½ in. L-head Haynes. Cylinders cast in pairs. Model 26, A. L. A. M., 43.35 H. P., Dynamometer 65 H. P. Model 27, A. L. A. M., 43.35 H. P., Dynamometer 65 H. P. Model 28, A. L. A. M., 29.9 H. P., Dynamometer 48 H. P.
Weight—Model 26, 3800 lbs.; Model 27, 4000 lbs.; Model 28, 3400 lbs.
Cooling—Centrifugal pump and pressed steel fan.
Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.
Ignition—American Simms Magneto.
Carburetor—Stromberg.
Lubrication—Splash and gravity feed.
Control—Left hand. Vulcan Electric Gear Shift.
Transmission—Selective Type, three speeds forward, one reverse.
Steering Column—Worm and worm gear type.
Clutch—Haynes contracting steel band.
Rear Axle—Full Floating Timken on Models 26 and 27; McCue, Model 28, Gurney Bearings.
Front Axle—I-Beam. O. H. steel heat treated.
Wheels—Artillery type. Funk demountable rims.
Tires—Models 26 and 27, 36 x 4½. Model 28, 34 x 4.
Springs—Front Semi-elliptic 39⅛ x 2, rear 48 x 2.
Brakes—15¼ external and 15 internal Models 26 and 27. 12 and 16 internal on Model 28.
Body—Indiana Blue or Pacific Tour gray; chassis black; fenders black enamel.
Gasoline Feed—Pressure. Automatic feed.
Upholstery—Buffed leather—deep cushions.
Starting and Lighting—Leece-Neville electrical system.
Cowl-board Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge, and speedometer. Models 26 and 27 have rim wind clock.
Other Standard Equipment—Top, top cover, mechanical tire pump, rain vision ventilating windshield, Vulcan Electric Gear Shift, two large electric head lights, electric side lights, electric tail light, full dash equipment, electric starter, generator, 12 volt, 60 ampere hour storage battery, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim, and Collins curtains. Models 26 and 27 have shock absorbers.

Hand lever shift optional at $200 reduction.

The same amount of work you're devoting to a slow-selling car would put you on easy street, if you handled the Haynes.

Maybe there's still the chance for you to become a Haynes dealer with all the chance for big profits that it means.. Write and see if your territory is open.

The Haynes Automobile Co.

1 Main Street **Kokomo, Indiana**

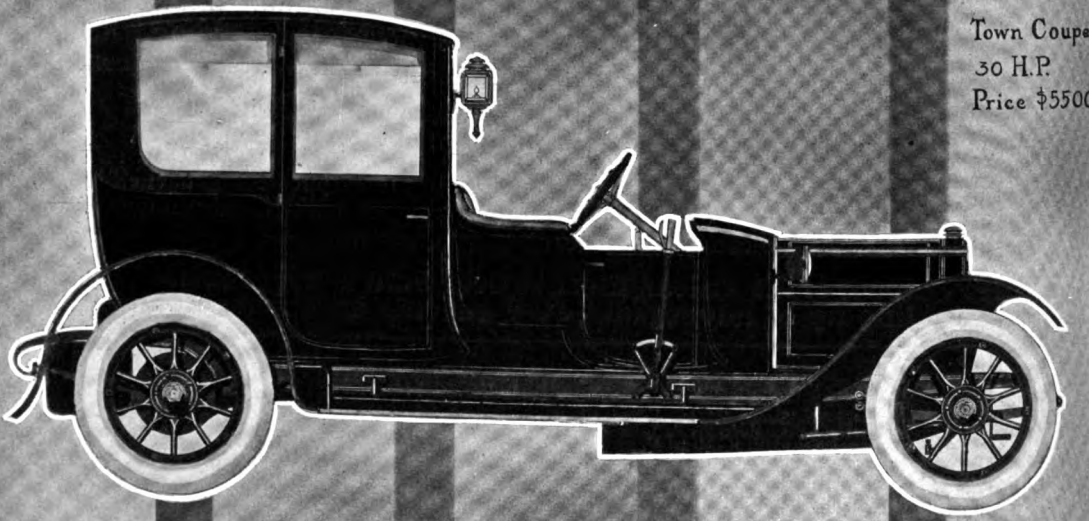
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-DEALERS-

Europe's Leading Car

Lancia

sells at AMERICAN PRICES



Town Coupe.
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

You, Mr. Dealer, have a market place for the Lancia, the car of durability, silence, flexibility, speed and rakish design. We will help you make your sales. Write and get our plan and proposition.

ADAMS-LANCIA COMPANY
235 West 58th Street, New York City

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Utmost Quality

Proved by the Tire

Mr. Dealer, if your trade wants **the best in tires,** we want to tell you about Marathon.

We build in the **Utmost in Quality.** That's proved by the tire.

We factory-insure 4,000 miles service. And the tire's service to users, proves 4,000 to be the minimum. The average mileage is far above that figure.

Study these reasons:

Sea Island Fabric: We use nothing but Sea Island. That's the finest tire fabric obtainable. It's highest in tensil strength. It's the costliest fabric we can buy, but the cheapest for tire users—it gives utmost service.

Finest Rubber: We use only finest rubber in building Marathon. See the tire and you won't question that fact. We spare no expense to attain highest possible quality.

Hand Built By Experts: Marathon tires are hand built by expert tire men, very slowly. Hurrying is not permitted. This slow, exacting method costs us more—cuts our profit—but it insures **perfect construction.** It insures utmost service to users.

Concentrated Tread: Note how we heap up the tread rubber where the wear comes. That feature avoids waste. And it increases mileage.

Live Steam Single Cure: We single cure Marathon tires, in live steam. That gives unitized construction—makes all parts one. Tread and fabric separation are impossible. The live steam single cure also increases wear resistance.

Insured 4,000 Miles: The above are reasons how we factory-insure Marathon tires for 4,000 miles. And they are reasons why the average service is far above 4,000.

We absolutely guarantee every Marathon to give at least 4,000 miles. Motorists want this 4,000 mile tire. Do you see why you should sell Marathon?

Write for our exclusive dealers proposition

THE MARATHON TIRE & RUBBER COMPANY

Cuyahoga Falls, Ohio

Distributors in most large cities

MARATHON

108

COX OXYGEN CARBON CLEANER



New
Thorough
Quick
Inexpensive
Harmless
Efficient
Necessary
Profitable

The first really efficient and thorough method of cleaning carbon out of the cylinders is the new Cox Oxygen Carbon Cleaner. It consumes every particle of carbon, even in corners where it could never be scraped out, without the slightest possibility of harming the cylinders.

It takes from 6 to 10 minutes to clean each cylinder, averaging 30 minutes for a four-cylinder motor and 45 minutes for a six. Any workman can do it. Does not require experience or expertness. Absolutely safe to handle.

For Public Garages

The profit possibilities for you in the Cox Oxygen Carbon Cleaner are only limited by the number of your customers. You do the work in one-tenth the time and only a fraction of the cost of any other method. Motorists will pay you well to clean their cars regularly. It is just as necessary as washing the car. This new method will quickly establish the custom of regular cleaning.

For Large Private Garages

For private garages in which more than one or two cars are kept, the Cox Oxygen Cleaner is a good investment. It pays for itself in the greater economy and improved running of the car.

Price and Selling Plan

The complete outfit costs $25. The tank is loaned—no charge made for same. You are charged only for the refills. Each tank contains sufficient oxygen for 35 to 40 cylinders. Refilling tanks costs $2.00. This is the only expense.

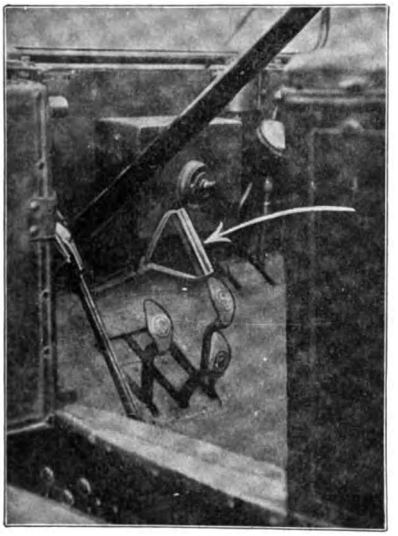
Write for information NOW.

COX BRASS MF'G. CO.
ALBANY, N.Y.
1779 Broadway New York City
870 Woodward Ave Detroit, Mich

COX BRASS MFG. CO., Albany, N. Y.
Gentlemen: Please send me full information about the Cox Oxygen Carbon Cleaner.
Name.....
Address.....
City.....
State.....
M. W. 10.3

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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

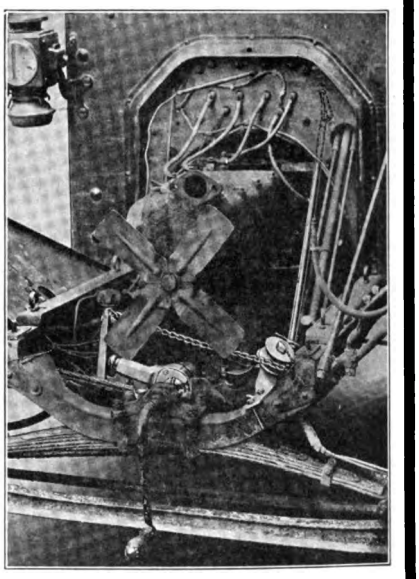
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

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Waterproof High Tension Magneto

is a magneto *you* can apply to *your* Ford car, and it will give the motor the response and flexibility of the highest priced automobiles.

A SPLITDORF "Ford Special" magneto increases motor efficiency 33⅓ per cent., saves its cost in less gasoline consumption, assures constant electric lighting and is installed easily, quickly and inexpensively.

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Everywhere it cleans thoroughly and quickly. Its fine particles penetrate, loosen and wash away all dirt and grime from every place with

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75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

USE A

SCHRADER
Universal Tire Pressure Gauge

and Save Your Tires

Price, $1.00

For Sale by

A. SCHRADER'S SON, Inc.

32 Rose Street, New York

Mend It By STEAM!

Don't BURN On Your Patches. VULCANIZE Them On — By Scientific Factory Method

That's the money and tire-saving advantage now offered motorists by the Positive Steam Vulcanizer. A dead-sure way to cut tire costs and increase tire mileage. Find out all about the new

Positive Steam Tire Vulcanizer

The only portable tire vulcanizer of its kind utilizing steam, the only scientific vulcanizing agent. Mends cuts, holes, punctures in tube or casing from size of nail to 2½ inches in diameter, or larger by resetting. Makes repair a veritable part of casing itself.

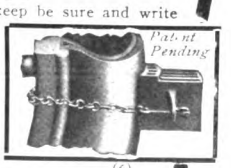
Dealers: If you want to cash in on this new ECONOMIZER, write us quick. Price so low, the Positive Steam Vulcanizer sells like hot cakes.

20 Minutes Turns the Trick!

No dilly-dallying around! No uncertain results! All you do is apply gum rubber—clap on vulcanizer filled with water in one end, gasoline in the other—and touch your match! 20 minutes after, your casing (or tube) is as good as new. And you've done what others would charge from $2 to $6 for, and do NO BETTER. How long do you suppose it would take such a money-saver to pay for itself? It does it many times over in a single season!

Get Our Liberal Offer!

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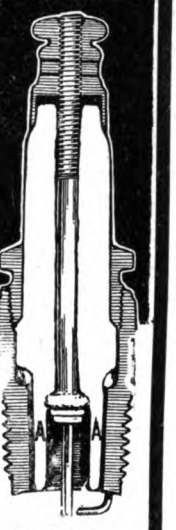


THE POSITIVE TIRE VULCANIZER CO.

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(6)

Special Announcement
Mezger Plug becomes the
J-M (MEZGER) SOOT-PROOF SPARK PLUG



Sectional view. Note porcelain "petticoat" A A, extending to end of chamber.

In future the famous Mezger Soot-Proof Plug will be known as the **J-M** (Mezger) Soot-Proof Spark Plug, and sold exclusively by this company.

This is the **only** absolutely soot-proof spark plug on the market—the only plug that actually **cleans itself!** Therefore the only plug that **can not short-circuit.**

Soot can not accumulate at the firing point because the heat of the porcelain "petticoat," which extends to the end of the plug, burns up carbon as fast as it settles.

In other plugs the "petticoat" extends only part of the way down, leaving a large space for the accumulation of soot.

The porcelain used in this plug is proof against rapid changes of temperature. Even when heated red hot and thrown into water it will not crack—a much severer test than would be encountered in actual service.

These plugs have been on the market for over 12 years. Millions have been sold. Over 400,000 of America's finest cars are now equipped with them. Many have been in use for over 8 years and are still in service.

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The J-M Plug is backed by a five-million dollar concern with a 55-year record for square dealing. If any plug does not give satisfactory service we will supply a new one or refund purchase price.

Sold by most dealers. Shipped direct from our nearest branch if your dealer can't supply. Price $1.00. Write nearest branch for interesting, illustrated booklet.

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MADE GOOD IN A DAY

Get the new Stutz Series "E" Catalog

NOW READY

See the Sturdy Stutz before you decide

Buying a motor car is a business transaction well worthy of your most serious consideration.

It means the investment of a considerable sum of money, and in justice to yourself you should look around before you ACTUALLY BUY—see that you get FULL VALUE for your money.

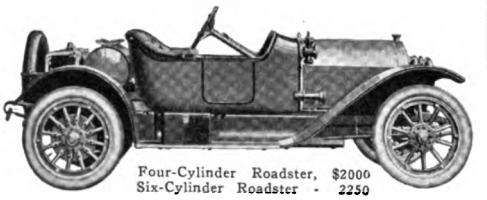
The Stutz welcomes the "motor car shopper." The more you know about all other kinds of motor cars, the more you will appreciate the Stutz when you know it, too.

All we ask is that before you select your next motor car you compare the Stutz, part by part, with any car at any price—then you, too, will decide in favor of the Sturdy Stutz.

Write for our new illustrated Catalog No. A-15, Series "E." We will put you in touch with your nearest Stutz dealer.

We still have some desirable territory open and will make a satisfactory contract with responsible dealers. Write us.

Stutz Motor Car Company of Indianapolis



Four-Cylinder Roadster, $2000
Six-Cylinder Roadster - 2250

STUTZ — the car that made good in a day

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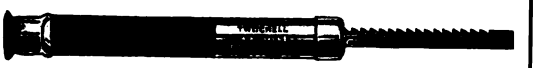
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YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



For Sale by Jobbers, Dealers, Garages or
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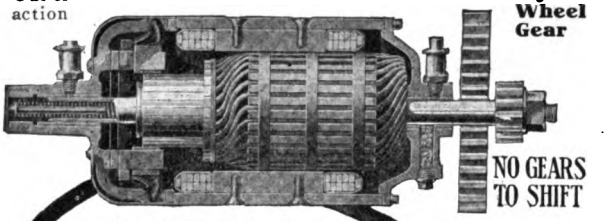
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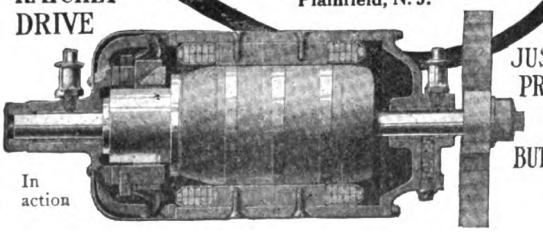
The Starter that works directly on the flywheel, eliminating all the intermediate mechanism commonly associated with engine starters.
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The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

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In action

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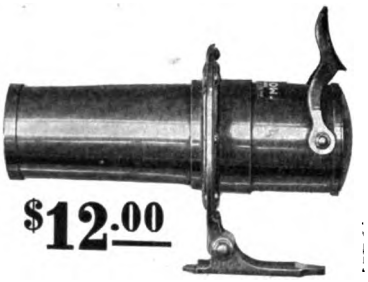
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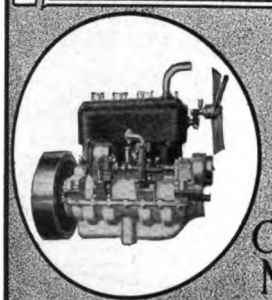
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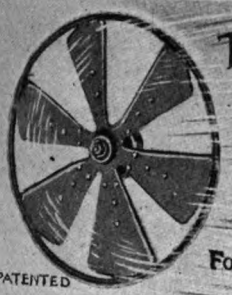
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Infallible Starting

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Four Other Standard Sizes
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Quick Detachable and Demountable Rims

Our new and improved manufacturing facilities insure quality products and prompt deliveries in large or small quantities.

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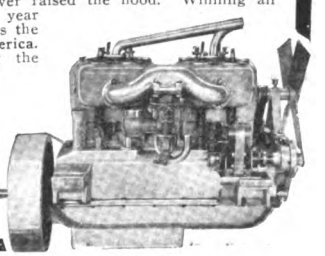
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Each gear packed in a box

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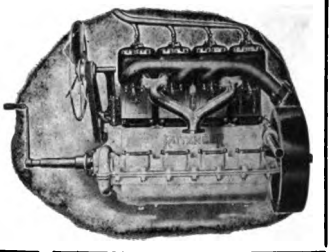
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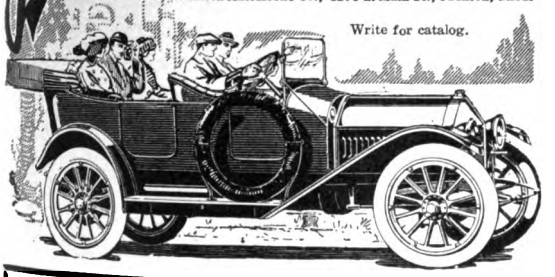
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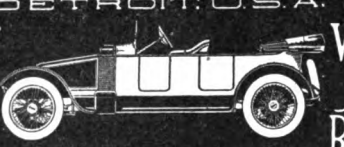
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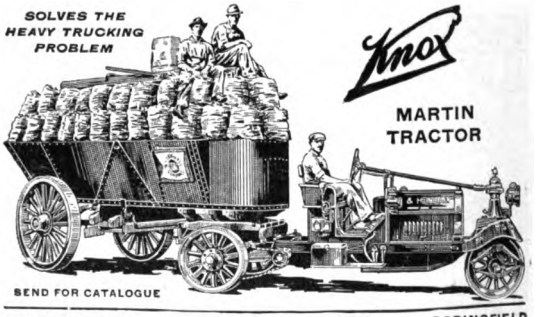
The ***best car value*** in the market and a ***10% greater net profit*** for the dealer are the two big inducements we offer live aggressive direct agencies. Write today.

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"THE TUGBOAT OF LAND COMMERCE"

SOLVES THE HEAVY TRUCKING PROBLEM



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Marmon "Thirty-Two"

Four-cylinder, 32-40 h. p., 120-inch wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

Price, $3,000.

"The Easiest Riding Car In The World"

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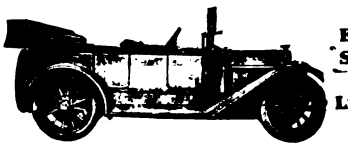
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Sixty Years of Successful Manufacturing

Six-cylinder, 48-50 h.p., 145-inch wheel base with short turning ability eliminating the old objections to long wheel base. Body types and equipment to meet every requirement. The only big car with small car advantages. Wonderful riding qualities and surpassing power and flexibility. A car developed by years of exacting tests. Price, $5,000.

Marmon "Forty-Eight"

Type 35 Series G and H



Electric Starting and Lighting

MERCER

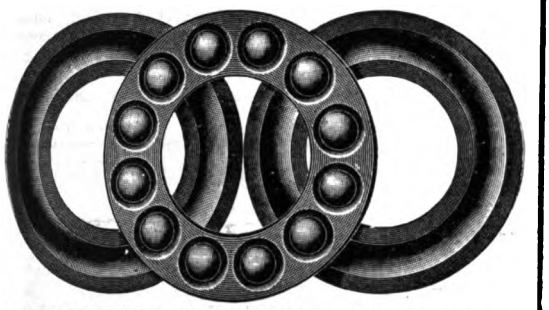
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Electric Lighting — Electric Starting

The Aplco System

Your motoring is made a pleasure; night riding is no longer a nerve strain; it's delightful, safe.

The Aplco Electric Starter never fails to turn your engine; it is a starter that never stops starting.

You'll want to know more about the Aplco Electric Lighting and Starting System. Ask us for full particulars. Then demand it on your new car.

THE APPLE ELECTRIC COMPANY, 64 Canal Street, DAYTON, OHIO

Guarantee your customers perfect ignition by equipping their motors with

The Atwater Kent Ignition System



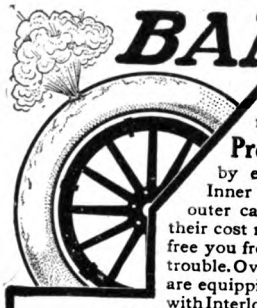
More than 100,000 users of the Atwater Kent System will testify that it has increased the speed, flexibility and hill-climbing ability of their motors and developed a smoothness of running which was a revelation to them.

It will do the same for your customers.

Write for booklet "D."

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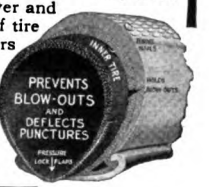
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by equipping your tires with Interlock Inner Tires. Easily inserted between outer casing and inner tube. They save their cost many times over and free you from the dread of tire trouble. Over 500 car owners are equipping their tires with Interlocks everyday.



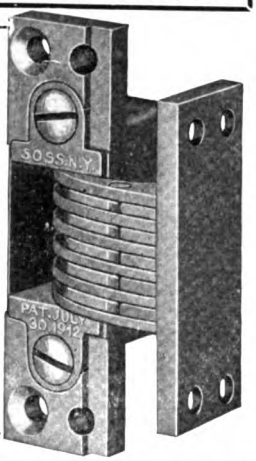
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that gives full information, prices, testimonials of Interlock users, etc.

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Soss Concealed Hinges

for touring bodies, coupes, limousines, roadsters, etc., have an interlocking construction insuring strength, long wear, and absolute rigidity. The trouble avoided and time gained when hanging doors with "Soss Hinges" are important factors.



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Soss Mfg. Co.

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The One Mechanical, Never Failing Warning Device

Costs Little to Buy—Costs Nothing to Operate

No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

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Shock Preventer

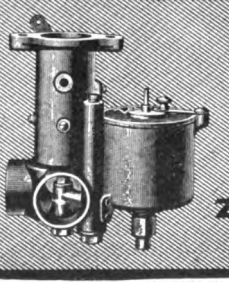
A scientific, mechanical triumph. NOT FRICTION but graduated resistance of rubber discs according to road conditions. Made in sizes to fit any car.

They are being rapidly adopted by car builders as standard equipment and by car buyers everywhere. *Ask us to prove this.*

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Gives Standard Carburetion

ZENITH CARBURETOR CO. DETROIT, MICH.

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for Ford Model T Cars

enables you to crank your engine from the seat. It operates mechanically—no electricity, no gas, no air.

It is perfect in construction; simple and easy to operate.

No danger from back-firing. No possible harm to the motor.

The Detroit Mechanical Starter is easily attached, light in weight, positive in operation.

It is guaranteed free from mechanical defects for sixty days and is low priced. Write us for further information.

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For Automobiles, Motor Trucks, Aeroplanes, Motorcycles, Bicycles.

We Also Make Axles and Hubs.

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Is Electricity Cheaper Than Gas Light?

How much does a battery cost? How long are batteries lasting? How much do other repairs and replacements cost?

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If any editor, or any advertiser, claims that electric lights cost less to use than Prest-O-Lite, you can easily prove that he is either ignorant or worse.

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.

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Know the Heat of Your Motor While Driving!
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For thoroughly satisfactory service on Motorcar, Motorboat, Aeroplane or Stationary Motor, insist on Champion Spark Plugs.

You take no risk in buying the spark plug specified by the makers of three-quarters of all the cars now being produced in America.

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DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.

Manufactured by
NATIONAL MOTOR SUPPLY CO., 5601 Euclid Avenue, Cleveland, Ohio

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

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One of Those Wrapped Tread Repairs That Outlast the Tire

The wrapped tread blow-out repair is the best for the motorist because it is stronger than any other and does not make an unsightly section on the tire.

It is the best type of repair for you to make because it is simple, and requires only about half as much material as the old sectional method. Anybody in your garage can make good wrapped tread repairs without a lot of experience, and **you can guarantee the job.**

SHALER Vulcanizers

are the only vulcanizers that use the wrapped tread method successfully because

1. They are the only vulcanizers that heat the tire from the inside and outside simultaneously.

2. They are the only vulcanizers which have a temperature control that is automatic.

Shaler Vulcanizers heat with steam or electricity. One of their biggest advantages is that you can start with a small equipment and increase it to keep up with your requirements. Shaler Vulcanizers will do every practicable kind of tire repairing.

Garage Managers:

Don't fail to write at once for a complimentary copy of the Shaler book, "Common Sense About Tire Repairs." It tells what you want to know about tire repairing and how to start a vulcanizing department. A postal will bring it by return mail.

C. A. SHALER CO.

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HOW to time automobile, air ship and motorcycle motors, correct, simple, postpaid 25c. J. C. GEHRING, Ft. Wayne, Ind.

FOR SALE OR RENT — Completely equipped automobile or engine manufacturing plant, located in large middle west city, attractive labor, raw material supply and railroad facilities. Plant can be operated on short notice. Address Box 264, care Motor World.

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Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

A YOUNG MAN, age 24, desires to change position about Jan. 1st. Have had over five years automobile business experience. With present employer 4¼ years, 2½ years office work, balance of time have had charge of business, selling, etc. Best references given. Address EXPERIENCE, care Motor World.

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Owners or dealers; any state, county or city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebakers, Overlands, etc.
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BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

THE only successful aluminum solder will solder aluminum, silver, nickel, brass, pewter; guaranteed. Box with instruction, 50c., stamps or money order. No free samples. ALUMINUM CO., 2714 Olive St., St. Louis, Mo.

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FORD CAR WIRE WHEELS.
Demountable wire wheels, interchangeable all around, built especially for Ford cars. Five wheels to a set, enabling you to carry spare wheel with inflated tire and make quick change.
THE F. & H. WIRE WHEEL CO.,
Columbus, Ohio.

KEROSENE FOR AUTOMOBILES.
Our new Model B uses successfully half and half mixture lowest grades kerosene and gasoline. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special Agents' prices. Dept. 9. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

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Makes a uniform black lining of all faded and stained linings of tops and curtains. A fast black color that will not fade or wash off. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE.—Complete charging rectifier for electric automobiles, together with automatic shutoff. Apply OSCAR GREENWALD, care Gimbels, Milwaukee, Wis.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

WE make Ford racing type bodies in several models, for immediate delivery. AUTO SHEET METAL WORKS, 1530 S. Michigan Ave., Chicago, Ill.

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Air drying with a high gloss finish on all metal parts of automobiles. One coat covers solid requiring no primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

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A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

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25% to 50% more mileage

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from base to spark plug, have features that are "Different and Better."

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A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.

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Specialists in **Spring Suspension** High Grade Only

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Famous for Their Durability

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AUTO-TOP FABRICS

OF EVERY DESCRIPTION

Samples and Prices on Request

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ARE GOOD TIRES

METZ "22" ROADSTER $475

The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY

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"American Made"

NOW READY FOR THE TRADE

Highest Efficiency—Good Service Guaranteed

THE SIMMS MAGNETO COMPANY, 1790 Broadway, N. Y. City, Factory, Bloomfield, N. J.



Ask Lewis about valves We make valves exclusively—special heat-treated valves that "stand up" in service. Don't take chances. For anything in valves, write

Lewis Electric Welding & Mfg. Co.

TOLEDO, OHIO

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Why don't you, too, sell

Vitalized Rubber

Diamond Tires

Squeegee Tread

Won't Skid

The Diamond Squeegee Tread is almost human in action.

The outside bars scrape off the grease and slime, the second bars dry the road surface, and the middle bars *grip* and *hold.*

The double thickness Squeegee Tread made of tough, road-resisting Vitalized Rubber insures a good, liberal mileage.

After the Squeegee Bars are worn from long service, there still remains a strong, thick, tough tread made of More Mileage Vitalized Rubber.

Long Wear

All types of Diamond Tires are made of Vitalized Rubber—a process that makes the tire tough enough to fight the road—elastic enough to absorb shocks.

This is one of the reasons why Diamond Tires last longer—because they are built that way.

Honestly Built

Diamond Vitalized Rubber Tires have been put to the severest tests by motorists everywhere and have *made good.*

Built by expert tire builders, assisted by the latest improved machinery, made of fabric and rubber that is of the highest quality obtainable, backed by sixteen years successful tire building, money cannot buy a better tire today than the Diamond.

Selling Satisfaction

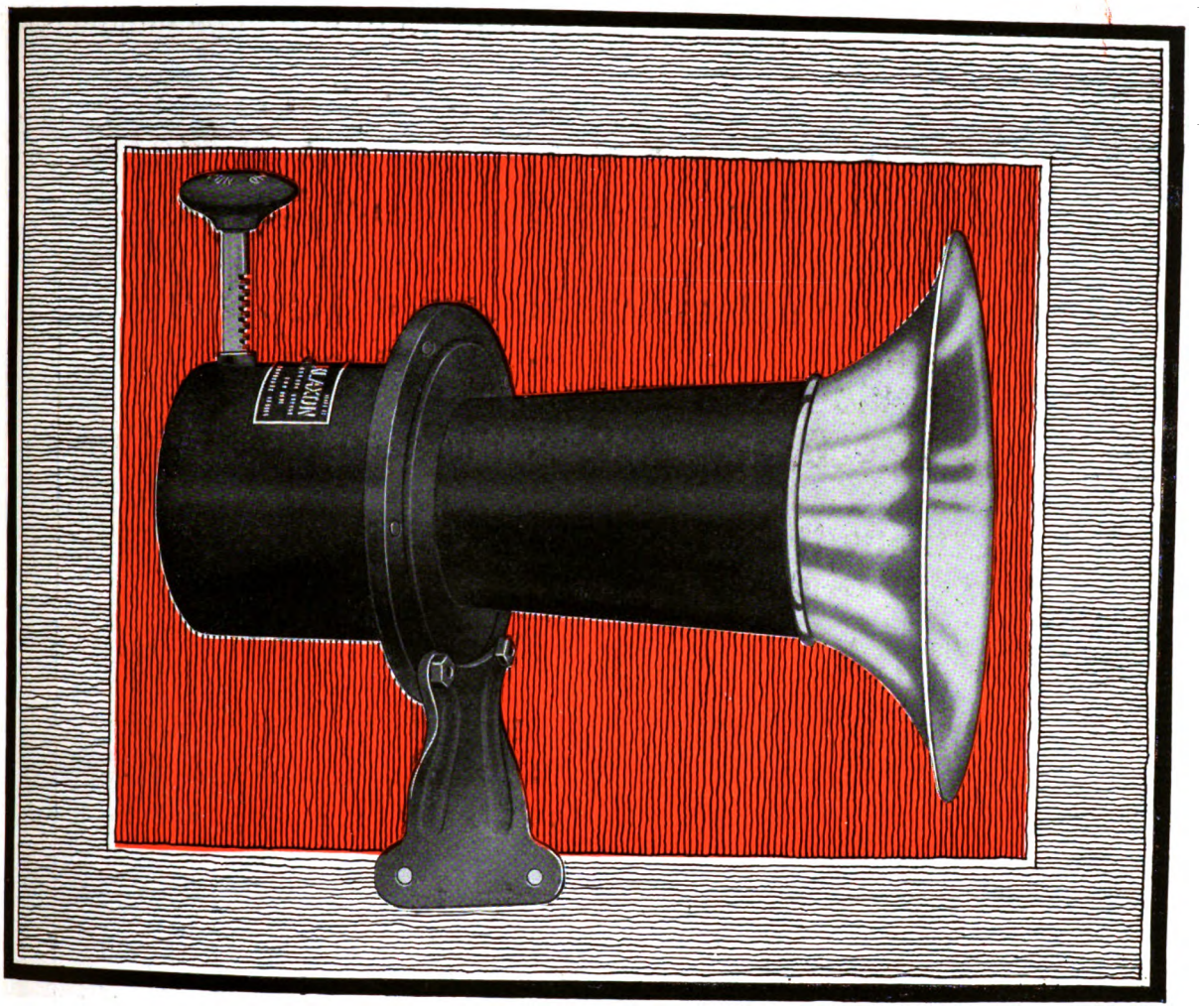
You need not hesitate to recommend and sell Diamond Tires. Among all the different tires made, the Diamond stands out prominently as the one that has delivered *maximum* mileage at *minimum* expense—the tire that makes good for everybody everywhere.

Why continue experimenting when you can sell a tire that will *satisfy* and *hold* your trade—Diamond Tires.

Equip with Diamond Tires

BEST FOR AUTOMOBILES, BICYCLES AND MOTORCYCLES

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The Hand Klaxon, $10

THE HAND KLAXON is not entirely new. It is a development of the original Hand Klaxon manufactured in 1909 and since then gradually discontinued owing to the large demand for motor driven Klaxons.

The Hand Klaxon operates on the Klaxon principle of a steel diaphragm set in violent vibration by a toothed wheel. In the electric Klaxon this wheel is rotated by means of an electric motor; in the Hand Klaxon by a train of gears that attain high speed under pressure on the push-rod.

The Hand Klaxon has the true Klaxon note and is sold under the regular Klaxon Guarantee of permanent satisfaction.

Klaxon quality is built into the Hand Klaxon. With the Klaxon reputation to sustain it is obvious that we cannot afford to put the Hand Klaxon on the market unless it is vastly superior to any other mechanical signal at present in use.

The price of the Hand Klaxon is $10. Orders accepted November 1st; deliveries will begin December 1st.

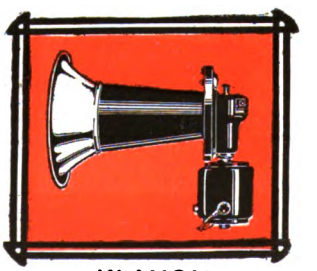


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy

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Packard Motor Trucks

We are the largest motor truck manufacturers in the world.

We are not assemblers—we actually make our goods. We stand behind our goods. We would not make what we could not stand back of.

We sold $4,000,000 worth of Packard trucks in the last year.

Our permanent success depends upon what our patrons say of our vehicles.

ASK THE MAN WHO OWNS ONE

In the motor trucks and cars built by the Packard Motor Car Company, no measure shall be used except the standard of such perfection as the art affords.

It is a hard, mechanical fight to make a perfect truck. Evolution is the process. Packard motor vehicles are a logical development, based on fourteen years of engineering progress.

The carrying of merchandise at minimum cost is the essence of truck efficiency. We know our business—it is to do your hauling in the cheapest and most satisfactory manner.

Packard trucks are built in five sizes—two, three, four, five and six tons. We can supply the type of body to meet your requirements.

Packard trucks are used in 172 lines of trade.

PACKARD MOTOR CAR COMPANY

DETROIT, MICHIGAN

LINCOLN HIGHWAY CONTRIBUTOR

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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXVII
No. 4

New York, October 16, 1913

Ten cents a cop
Two dollars a ye

BERRY BROTHERS' VARNISHES

TRADE LIONOIL MARK

BERRY BROTHERS' VARNISHES

RUST—METAL'S WORST ENEMY—CONQUERED BY LIONOIL

Rust on metal parts is each day costing the American automobile manufacturer thousands of dollars besides greatly lessening the standard of his product.

No metal body can be finished perfectly if at any time it has been rusted. It is absolutely essential that the surface be free from any spots. Lionoil is the world's greatest rust preventive. Bodies coated with Lionoil when in use show no tendency to peel, check or flake off.

Any metal part such as springs, axles, frames, fenders, lamps and all sorts of stampings and forgings, are absolutely insured against rust if coated with Lionoil.

Lionoil can also be used as the liquid ingredient for Metal primer or "roughstuff." We can also furnish Lionoil metal primer ready mixed.

Lionoil is also a great labor saver. It pays for itself easily in labor and metal saved. It is not expensive, covers lots of surface and air-dries quickly.

Write us for information regarding Lionoil or any of our other products such as the Raven line of black Japans for lamps, bonnets, top bows and other parts. We have a large corps of experts who specialize on finishing problems. Write for information.

BERRY BROTHERS

(Incorporated)

Largest Manufacturers of Varnishes and Japans in the World

FACTORIES: Detroit, Michigan and Walkerville, Ontario

BRANCHES: New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco, London, Eng.

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yor

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Need there be any further argument advanced for the use of Shock Absorbers on all cars?

Motor Age, September 11th, says:—"Truffault-Hartford Shock Absorbers were fitted to every one of the cars that started in the Elgin race, except one, *and that car ran only 35 miles.*"

Insist upon Truffault-Hartford equipment on the car you buy.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

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Manufacturers of Hartford Electric Lighting and Starting System

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—Both Big Factors in the Choice of Firestone Tires.

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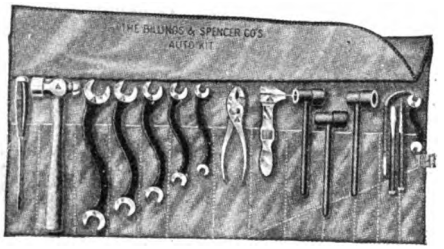
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33x4 inch Q. D. tires
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Turkish upholstery
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Clear-vision windshield
Mohair top, curtains and boot
Stewart speedometer
Electric horn
Flush U doors with disappearing hinges

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, October 16, 1913 No. 4

COLBY TO BE MERGED IN A MINNEAPOLIS ENTERPRISE

Iowa Car Manufacturer and Minnesota Motorcycle Maker Nucleus of New $6,000,000 Company — Big Things Planned.

For the purpose of acquiring the Colby Motor Co., of Mason City, Iowa, and the Minneapolis Motor Co., of Minneapolis, Minn., the Standard Motor Co. has been organized in the latter city, where it is stated it will erect a $3,000,000 plant.

The parties to the deal and the incorporators of the Standard Motor Co. are W. M. Colby, president of the company bearing his name, and C. H. McNider, president of the First National Bank of Mason City, and P. M. Starnes, F. E. Kenaston and F. E. Starnes, president, vice-president and secretary, respectively, of the Minneapolis Motor Co., which heretofore has manufactured motorcycles only. In addition to his holdings in the latter, Kenaston is also president of the Minneapolis Threshing Machine Co., and P. M. Starnes vice-president of the American Timber Holding Co. Others concerned in the transaction are M. J. Scanlon and S. H. Bowman, two prominent Minnesota lumber men.

It is the purpose of the new company to manufacture pleasure cars and light delivery wagons on a large scale, but whether it will continue the manufacture of the Minneapolis motorcycle has not yet been settled.

Most of the same men figure as the corporators of the Twin City Motor Co., which was incorporated last week with authorized capital of $6,000,000, under the laws of Delaware. Its relation to the Standard Motor Co. is not clear.

U. S. L. President Again Goes Abroad.

For the second time this year, J. Allen Smith, president of the United States Lighting & Heating Co., has crossed the ocean on business intent. He sailed on Saturday last, 11th inst., to Europe to close up several deals which are pending there, some of which have to do with the U. S. L. starting and lighting system. He will probably remain abroad until after the London and Paris shows.

To Build Electrics on the Coast.

Due to the initiative of Volney S. Beardsley, one-time president and general manager of the Auto Vehicle Co., of Los Angeles, a serious effort will be made to manufacture electric vehicles on the Pacific Coast. It already has taken practical shape in the organization of the Beardsley Electric Co., which will set up a plant in Los Angeles, the necessary equipment recently having been purchased in the East.

Beardsley will be president and manager of the company, Watt L. Moreland, of the Moreland Truck Co., of Los Angeles, vice-president; M. Elsasser, a Los Angeles capitalist, second vice-president; Arthur Wright, secretary; John T. Shannon, electrical engineer; Charles H. Sorg, superintendent. The company will produce pleasure vehicles, which will include, it is stated, an entirely original control mechanism in addition to several other exclusive features.

Dayton Truck Admits Bankruptcy.

Hard hit by the flood last spring, from the effects of which it failed to recover, the Dayton Auto Truck Co., of Dayton, Ohio, filed a petition in bankruptcy on Saturday last, 11th inst., listing its liabilities at $216,165.77 and its assets at $67,720.

Its president, R. T. Johnston, is the heaviest creditor. He holds the company's notes to the value of $113,773.85, and there is also due him on account $41,397. Other large creditors are the Wisconsin Motor Mfg. Co., of Milwaukee, $10,141, and John Klee, $16,000. Of the debts, $196,440 are unsecured and there are liabilities to the amount of $10,725 for indorsements. Of the assets, $52,720 is represented by outstanding accounts, $14,000 by factory leasehold and buildings and $1,000 by machinery.

BONDS OVERDUE, RECEIVER ASSUMES CHARGE OF MASON

Action Precipitated by Refusal of Iowa Company's Creditors to Grant Extension—Its President Remains Hopeful.

Its creditors having refused to grant an extension, and having failed to meet its bonds at maturity, to say nothing of overdue interest thereon, the Mason Motor Co., of Waterloo, Ia., has been placed in the hands of Ira J. Hoover as receiver. Action was taken on application of F. W. Powers, trustee for the bondholders.

The bonds outstanding amount to $100,000 and in addition there is interest due on $36,000 since July 1, 1913, and on $64,000 since January 1, 1912.

The Mason Motor Co. is the successor of the Maytag-Mason Co., which became financially involved late in 1911, when, as a means of extricating it from its difficulty, bonds to the amount of $150,000 were issued, of which $50,000 since have been retired.

Despite the black outlook, E. R. Mason, president of the company, has not entirely lost hope of saving the property. He puts most of his faith in an offer he has made to the creditors of preferred stock for the amount of their claims and a bonus of common stock out of his own holdings and those of M. Dusenberg, who, with Mason, are the largest holders of the common, the proposal carrying with it the retirement of a large proportion of the Mason-Dusenberg stock. Mason also is seeking to organize a syndicate for the purpose of taking over and continuing the business.

In case neither of his plans come to a head, the bondholders will, of course, foreclose on the property and it will be offered for sale.

Although rarely seen in the East, except on race tracks, the Mason car has given a good account of itself in the West, the output, however, being limited.

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55 FEWER M. A. M. MEMBERS ACCOUNT FOR MORE SPACE

Despite Absence of Many Notables, Accessory Displays at Both Shows Will Be Larger Than Ever—Those Who Will Exhibit.

Despite the withdrawal of all the tire, axle and bearing manufacturers included in the membership of the Motor and Accessory Manufacturers, Inc., and although there were 55 fewer applicants than last year, when, on Thursday last, 9th inst., that organization made its allotments for the New York show in Grand Central Palace next January, it accounted for 19,000 square feet of floor space, 2,000 square feet more than the members occupied in the 1913 show.

The number of exhibitors who will share the increase is 103, as against 158 who exhibited last January when the New York show occupied both Grand Central Palace and Madison Square Garden and ran for two weeks. Of the 103, all except 11 will exhibit also at Chicago, where the M. A. M. members will occupy 20,000 square feet of floor space, an increase of 1,000 square feet. At Chicago last year, 149 M. A. M. members displayed their wares, of whom 110 did so during the first week only. On the forthcoming occasion, 106 will exhibit in the Windy City, 14 of whom will not appear in New York.

Those members to whom space was allotted are as follows:

American Bronze Co., American Hardware Corporation, Apple Electric Co., Automobile Supply Mfg. Co.

Badger Brass Mfg. Co., Benfold Mfg. Co., John W. Blackledge Mfg. Co., S. F. Bowser & Co., Breese Carburetor Co.,* Brown-Lipe-Chapin Co., Buda Co., Edw. G. Budd Mfg. Co., Byrne, Kingston & Co.

Carnegie Steel Co.,* F. S. Carr Co., Champion Ignition Co., L. C. Chase & Co.,* Coes Wrench Co.,* Adam Cook's Sons, C. Cowles & Co., William Cramp & Sons Ship and Engine Building Co.

The Dean Electric Co., Detroit Electric Appliance Co., Detroit Lubricator Co., Joseph Dixon Crucible Co., Doehler Die Casting Co., Double Fabric Tire Co., John L. G. Dykes Co., Dyneto Electric Co.

Edison Storage Battery Co., Edmunds & Jones Mfg. Co., Electric Auto-Lite Co., Electric Storage Battery Co.

Findeisen & Kropf Mfg. Co., Gabriel Horn Mfg. Co., Garage Equipment Mfg. Co., Gemmer-Detroit Starter Co., Globe Machine and Stamping Co., Gray & Davis.

A. W. Harris Oil Co., Hartford Machine Screw Co.,* Hartford Suspension Co., Geo. A. Haws,* Hayes Mfg. Co., Heinze Electric Co., Herz & Co.,* Hoffecker Co.

Ignition Starter Co., International Acheson Graphite Co.

J-M Shock Absorber Co., Janney-Steinmetz & Co.*

Kellogg Mfg. Co., Atwater Kent Mfg. Works.

Leather Tire Goods Co., Light Mfg. & Foundry Co.,* Link-Belt Co.*

Manufacturers Foundry Co.,* C. A. Mezger, A. R. Mosler & Co., Motometer Co., Motsinger Devices Mfg. Co.

National Coil Co., National Lead Co., National Tube Co., New York and New Jersey Lubricant Co., North East Electric Co.

Oliver Mfg. Co., The Pantasote Co., G. Piel Co., Randall-Faichney Co., Remy Electric Co., Reynolds-Browne Co., Rose Mfg. Co., Royal Equipment Co.

J. H. Sager Co., Schoen-Jackson Co., A. Schrader's Son, Inc., Schwarz Wheel Co., C. A. Shaler Co., Simms Magneto Co., Sireno Co., F. W. Spacke Machine Co.,* Sparks-Withington Co., Spicer Mfg. Co., Splitdorf Electrical Co., Springfield Metal Body Co., Standard Thermometer Co., Standard Welding Co., Stewart & Clark Mfg. Co., Stromberg Motor Devices Co.

Torbensen Gear & Axle Co., U. S. Light & Heating Co., Vacuum Oil Co., Valentine & Co., Veeder Mfg. Co., Vesta Accumulator Co., Voorhees Rubber Mfg. Co.

Warner Gear Co., Warner Mfg. Co., Weed Chain Tire Grip Co., Westinghouse Electric & Mfg. Co., Wheeler & Schebler, the White & Bagley Co., Willard Storage Battery Co.

Exhibitors denoted by an asterisk, 11 in number, will exhibit in New York only; those undenoted will exhibit in both New York and Chicago, and the following 14 will exhibit in Chicago only:

Auto Parts Mfg. Co., Baldwin Chain & Mfg. Co., Continental Motor Mfg. Co., Cotta Transmission Co., Diamond Chain & Mfg. Co., Gould Storage Battery Co., Hess Spring & Axle Co., Imperial Brass Mfg. Co., Lovell-McConnell Mfg. Co., McCord Mfg. Co., Rutenber Motor Co., Waukesha Motor Co., Whitney Mfg. Co., Ward Leonard Electric Co.

Chester Proposes to Produce Tires.

The Chester Rubber Tire & Tube Co., which recently was incorporated under the laws of West Virginia, will locate in Chester, Ohio, where it has acquired a former car barn and machine shop at Ninth street and Carolina avenue. Meanwhile, it is endeavoring to dispose of stock in order to secure the necessary capital to commence operations. The officers of the company are: John E. Newall, president; George Arner, vice-president; George Hasson, secretary; A. L. Skinner, treasurer.

PERLMAN CHARGES STANWELD WITH PATENT INFRINGEMENT

One-Time "Motor King" Bobs Up With Rim Patent Which He Is Said to Regard as Comprehensive—Attorney Silent.

Louis H. Perlman, who is best remembered by the metropolitan trade as the man who once styled himself "The Motor King," has again appeared in the limelight after an absence of several years; this time he appears as a patentee and has filed a suit in the United States District Court for the Southern District of New York against the Standard Welding Co., of Cleveland, O., maker of Stanweld rims, which he claims is infringing a rim patent which he took out February 4, 1913, under the number 1,052,270.

Just what there is to Perlman's claim is not made clear by his complaint beyond the fact that his patent covers a demountable rim, but it is understood that he claims important basic properties and a broad field. His attorney said he did not care to discuss the nature of the invention.

Whether it is as was said by one man, that the patent "covers nearly all the rims ever made," is problematical, but Perlman is said to regard his invention as sufficiently inclusive to come into close contact with several well known types.

Packard to Add Six Millions.

At a special metting of the stockholders of the Packard Motor Car Co., which is to be held in Detroit today, it is probable that the capital stock will be increased from $10,000,000 to $16,000,000. The new stock will be equally divided into common and seven per cent. preferred.

In connection with the increase, it is proposed to distribute $2,000,000, par value, of the new common stock as a stock dividend among present owners of the company's common stock. It is understood the holders of common stock will be asked to waive their right of subscription to the remaining $1,000,000 of new common stock and the $3,000,000 of new preferred stock, these to be retained for the present as treasury stock to be placed with selected purchasers not now identified with the company.

New Date Set for Cutting Sale.

The trustee's sale of the Cutting Motor Car Co.'s plant in Jackson, Mich., which was to have occurred on the 6th inst., has been postponed until Wednesday next, 22nd inst. The appraised value of the property is approximately $175,000, subject to incumbrances of about $30,000.

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U. S. MOTOR MEN'S CLAIM TO "BONUS" GOOD, SAYS COURT

Three Former Vice-Presidents Entitled to Sums Promised in Excess of Salaries — Employes' and Other Claims Adjudicated.

The "participation" or "bonus" or whatever it is that Alfred Reeves, Horace DeLisser and J. W. Wellington claimed they were promised by the United States Motor Co., of which they were at one time vice-presidents, is a claim which should be paid, according to a decision of the United States District Court for the Southern District of New York, which this week was called upon to pass upon the decisions of a master who had been appointed to hold hearings on certain claims. The money for which the trio asked was a sum to be paid in excess of their salaries, but a hitch developed when the receivers were appointed. The master allowed their claims and the court affirmed his decision.

Five employes—Christian Prouty, John A. Moore, William H. Tether, Alfred R. Gormully and William R. Devine—were also adjudged entitled to pay during the latter days of their connection with the big corporation. The master had ruled favorably to them. A claim of the Hartford Machine Screw Co. was reduced to $820 and passed. Claims by Frank Seaman, Inc., and the Prosser Engineering Co. were announced as settled out of court.

Affirmance was given to the master's decisions in regard to claims of the Manufacturers' & Traders' National Bank, the Detroit, Grand Haven & Milwaukee Railroad Co., P. H. Gill & Sons' Forge & Machine Works, the New York Wire & Spring Co., the Hartford Suspension Co. and the Ball & Roller Bearing Co.

Beautiful Bubble Bursts in Iowa.

After painting gorgeous pictures for more than two years, and promising fortunes to all who purchased its stock, the Western Implement & Motor Co., of Davenport, Ia., capitalized at $5,000,000, of which, at last reports, W. H. Haskell was president, finally has gone into the hands of a receiver.

Originally the company proposed to build motor cars and trucks and agricultural tractors on a huge scale, using, as a nucleus, an Iowa automobile factory, but the owner of it grew wise in time and the gigantic scheme, which included the creation of a model industrial village, underwent reorganization. It abandoned its automobile intentions, but continued to paint the glories of agricultural tractors and cotton pickers to such good purpose, it is stated, that something like $300,000 worth of stock was disposed of to confiding persons, the country having been flooded with literature pointing out the handsome profits that might some day accrue. W. T. Waterman is the name of the receiver in charge.

Reo Reports Surplus of $2,000,000.

According to the statement, rendered at its annual meeting on Thursday last, 9th inst., the Reo Motor Car Co., of Lansing, Mich., has a surplus of $2,061,887.40. Its total assets are $4,217,474.20. Aside from $2,000,000 capital stock and the surplus, its current liabilities are but $150,586.80. The statement, as rendered to the stockholders, is as follows:

Assets

Capital assets:		
Real estate, buildings, machinery, plant equipment and other assets		$2,019,356.17
Current assets:		
Inventories, accounts receivable, etc	1,312,734.42	
Cash on hand and in banks	885,383.61	
		$4,217,474.20

Liabilities

Capital stock, 200,000 shares of par value of $10 each	$2,000,000.00
Current liabilities	155,586.80
Surplus account	2,061,887.40
	$4,217,474.20

Willys-Overland Earnings, $5,700,000.

Figures released preliminary to its annual report show that for the fiscal year which ended June 30, 1913, the net earnings of the Willys-Overland Co. amounted to $5,705,537. Tabulated, the preliminary figures are as follows:

Net earnings from operation of all companies, after deducting all expenses, including an adequate allowance for accruing renewals and depreciation		$5,705,537
Interest on notes and accounts receivable, etc	176,829	
Total income	5,882,367	
Interest on floating debt	228,468	
Surplus	5,653,898	
Preferred dividend	350,000	
Surplus	5,303,898	

Grant May Leave Detroit for Dayton.

Negotiations between the Grant Motor Co., of Detroit, and the Greater Dayton Association, of Dayton, O., are in progress and may result in the removal of the Grant plant from Detroit to Dayton. Officers of the Grant company have made a number of visits to Dayton and, it is stated, have practically decided on one of several sites.

Firestone Locates a Branch in Rochester.

The Firestone Tire & Rubber Co. has opened a branch in Rochester, N. Y., at 1223 East avenue. It is in charge of Philip Hensen, who previously was connected with the Firestone branch in Buffalo.

PROBING ADDS TO ODOR FROM MICHIGAN BUGGY'S FAILURE

Bales of Undated Notes and "Inside Deal" with Gerber, of Pittsburgh, Uncovered—Piling Blame on Palmer.

Those dealers' notes which enabled the Michigan Buggy Co., of Kalamazoo, to keep afloat so long continue to be one of the wonders, or one of the scandals, of the investigation which has been in progress by the trustee in bankruptcy during the past three weeks.

M. H. Lane, the former president of the company, who, after 28 years, was ousted from the presidency and "kicked upstairs" by being made chairman of the board; Frank B. Lay, Jr., sales manager and one of the participants in the "velvet" payroll which was charged to advertising, and most of the chief accountants and bookkeepers of the bankrupt and looted company gave testimony, in all of which the dealers' notes figured prominently.

As stated in Motor World long before the rottenness became public property, these notes were given by dealers for the total amount of their contracts and were discounted by the banks whenever the Michigan company found it necessary to raise cash, which was often. The latest testimony made it appear, however, that a surprising number of dealers not only thus made what amounts to large advance payments but signed notes without dates, thereby enabling the notes to be dated by the Michigan officials whenever it was desired to negotiate them.

There was an astonishing amount of ignorance displayed concerning not only these notes, of which at times there were approximately $1,000,000 on hand, but other things, everyone shifting the blame to Victor L. Palmer, the secretary-treasurer and general manager of the company. He appears to have been its financial "genius," even former President Lane stating that he knew little or nothing about the company's finances, having entrusted them almost wholly to Palmer, who proved an adept manipulator. The Pennsylvania Sales Co., of Pittsburgh, of which E. F. Gerber is the head, appears to have been one of Palmer's pets. Choice contracts with him were executed and notes for enormous amounts accepted in payment, a grand clean-up sale to Gerber at less than cost being one of the arrangements effected shortly before the crash came.

One of the accountants admitted that $860,000 in undated notes was on hand at one time, but he could not explain why there were four or five times as many

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notes on hand as there were existing contracts. The notes, it seems, were not entered on the books at the time contracts were secured, but when they were entered after discounting they were listed as bills receivable and considered an asset.

E. J. McCone, one of the bookkeepers, testified that one of Gerber's employes approached him and offered him "his own price" for a copy of the Michigan company's list of creditors which had been prepared for the receiver; McCone, however, refused the temptation. He also said that he once threatened to quit rather than make an entry as Palmer wanted it made.

While on the stand, former President Lane stated that after he was made chairman of the board he was sidetracked and was not even notified of meetings, becoming practically a nonentity, Palmer even instructing the postoffice officials that all mail be delivered to him personally. Frank B. Lay, Sr., his brother-in-law, who succeeded him as president, approached Lane last July, when matters were coming to a crisis, and endeavored to induce him (Lane) to mortgage his home in order to raise money to postpone the crash. Lane's inquiries, however, disclosed that E. F. Gerber, of Pittsburgh, was a heavy debtor but, despite the fact, at the first meeting that he (Lane) had been permitted to attend for months Gerber presented a contract for 400 automobiles at give-away prices, which the other directors favored but which Lane and the elder Lay opposed. Lay's two sons, who are also deeply involved in the scandal, then left the room, breaking the quorum; nevertheless, Lane discovered later that the 400 cars had been sold to Gerber, the cars being ordered shipped from other agencies which had them on hand. They were sold, it appears, for about half their actual cost.

When on the stand, Frank B. Lay, Jr., added little to the general fund of information. He admitted that on one occasion he sold a car while in Toledo and received $1,000 in cash which he declared he spent for golf balls, clothing, meat and groceries.

The investigation is still in progress, but the criminal inquiry will not be undertaken until October 21st, when the grand jury and special prosecutor appointed for the purpose will begin their work.

Many stories are afloat concerning V. L. Palmer and his doings, one of the most picturesque having to do with the impression made on his vanity by a Kalamazoo newsboy who once called him "Victorious Leader Palmer." It tickled Palmer so greatly that he took the boy into the company's employ and placed him in charge of the mail's distribution at a weekly salary of which he had never dreamed. Palmer's protege is said to have lorded it around the place in a surprising manner.

MAXWELL'S BALANCE SHEET GIVES SEVEN MONTHS' TOTAL

Deals Only with Assets and Liabilities and Not with Income—Good-will Still Remains Towering Item —Statements Compared.

No one will be able to obtain much information, or more satisfaction, from the balance sheet of the Maxwell Motor Co., whose fiscal year ended July 31st and whose statement just has been made public.

The chief outstanding item is the valuation placed on good will, patents, etc. It is carried on the books at $26,500,000, representing very much more than half of the company's assets, which total $41,002,563.63. On January 31 last they were estimated at $46,753,668.08, according to a statement rendered "in advance of the full completion of the plan of organization."

As the company was not incorporated until December 31st, 1912, the present report covers only a period of seven months, and makes no reference to even gross sales, income or earnings.

The chief tangible assets—real estate, buildings, machinery and equipment—are valued at $7,032,554.17, but only four of the plants are operating, and the remainder are idle and subject to sale.

The inventories foot up $4,837,905.89, but as $2,371,109.69 is reserved for depreciation thereon the net inventory value is really but $2,466,796.20.

Notes and accounts receivable amount to $739,390.67, and there is $1,042,324.89 in cash, the total assets, exclusive of good-will, etc., being $14,502,653.63.

Of the liabilities, $35,313,954.50 is represented by outstanding stock. Of the remainder, $4,537,001.77 is represented by reserves for depreciation on buildings, inventories, etc., and $490,174.01 by accounts payable, the total liabilities being $41,002,563.63.

The balance sheet and its comparison with the January 31st figures follows:

	July 31, 1913.	Jan. 31, 1913.
Assets		
Capital assets:		
¶Real estate, buildings, machinery and equipment	$7,032,554.17	$9,026,330.72
Investments	667,572.35	680,056.36
	$7,700,126.52	$9,706,387.08
Goodwill, models, patents, trade marks and trade names	26,500,000.00	26,849,880.44
Current and working assets:		
‡Inventories	4,837,905.89	5,415,339.26
Branch house assets (in course of liquidation)—net value	151,066.31	.....
Notes and accounts receivable	739,390.67	2,274,003.65
Prepayments	32,749.35	77,866.55
†Cash	1,041,324.89	2,430,191.10
	$6,802,437.11	$10,197,400.56
Total assets	$41,002,563.63	$46,753,668.08
Liabilities		
Capital liabilities:		
*First preferred	$13,000,000.00	$13,000,000.00
Less—in treasury	670,863.66	
	$12,329,136.34	
Second preferred	11,000,000.00	11,000,000.00
Less—in treasury	822,863.66	
	$10,177,136.34	
Common	13,000,000.00	13,000,000.00
Less—in treasury	192,318.18	
	$35,313,954.50	
Deferred liabilities:		
Real estate mortgages	134,705.85	156,342.50
Current liabilities:		
Accounts payable	306,757.34	
Accounts payable—unvouchered invoices	183,416.67	
	$490,174.01	
Wages—accrued	88,463.26	
Taxes, insurance, etc., accrued	29,177.47	
Customers' deposits on cars and parts purchased	102,885.45	
	$710,700.19	1,135,592.64
Reserve for depreciation of capital assets:		
On buildings, machinery and equipment	1,960,040.30	3,598,760.70
Reserve for depreciation of current and working assets:		
On inventories	2,371,109.69	3,594,521.21
On notes and accounts receivable	205,851.78	1,103,140.43
	$2,576,961.47	$4,697,761.64
Reserve for establishment of business, expenses applicable to prior period, and other items	306,201.32	1,165,201.60
Total liabilities	$41,002,563.63	$46,753,668.08

¶The Capital Assets represented by real estate, buildings and machinery include all plants. The company is operating only four of said plants; the remaining plants are subject to sale.

‡The total inventory, as noted above, less the reserve set up for depreciation, would leave a net inventory valuation of $2,466,796.20. One-third of this amount represents active material for new models and two-thirds represents active repair parts for new and old models.

†The Reorganization Committee and the receivers of the predecessor companies together hold $444,698.15 cash, in addition to the sum of $1,041,324.89 shown above. The balance, if any, of this $444,698.15, after their requirements, will be paid over to this company.

*Company incorporated December 31, 1912. Dividend on first preferred stock cumulative at seven per centum per annum from January 1, 1913. No dividend declared or paid.

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The Week's Incorporations

Chicago, Ill.—Rayfield Mfg. Co., under Delaware laws; authorized capital, $1,500,000.

Detroit, Mich.—Commercial Garage, under Michigan laws; authorized capital, $10,000; to operate a garage.

Chicago, Ill.—Kerosene Carburetor Co., under Illinois laws; authorized capital, $20,000. F. D. Bassett, E. G. Gossett, E. G. Atkins.

Chicago, Ill.—Standard Fender Co., under Illinois laws; authorized capital, $250,000. Corporators—F. H. Escher, C. C. Jensen, M. J. Roberts.

Dayton, Ohio—Parker Auto Repair Co., under Ohio laws; authorized capital, $5,000. Corporators—Guy F. Hall, L. V. Browne, H. R. Marquis.

Great Falls, Mont.—Standard Garage Co., under Montana laws; authorized capital, $30,000; to operate a garage. Corporators—H. J. Griffith and others.

New York, N. Y.—Motor Materials Co., under Delaware laws; authorized capital, $100,000. Corporators—F. C. Fearing, R. H. Robbins, B. A. Wordemann.

Minneapolis, Minn.—Twin City Motor Co., under Delaware laws; authorized capital, $6,000,000. Corporators—F. E. Kenaston, S. H. Bowman, M. J. Scanlon.

Muncie, Ind.—B. T. K. Gear & Engine Co., under Indiana laws; authorized capital, $100,000. Corporators—Francis M. Boyer, Alta Boyer, J. P. Kandel and others.

Fort Worth, Tex.—A. P. Mitchell Auto Co., under Texas laws; authorized capital, $15,000. Corporators—A. P. Mitchell, E. M. North, E. I. Malone, all of Fort Worth.

Detroit, Mich.—Detroit Cyclecar Co., under Michigan laws; authorized capital, $100,000; to manufacture motor vehicles. Corporators—Arthur M. Thomas, P. H. Cale.

Pittsburgh, Pa.—Spring Cushion Tire Corporation, under Delaware laws; authorized capital, $300,000. Corporators—W. I. N. Lofland, J. S. Collins, Jr., W. F. P. Lofland.

Toronto, Can.—Bosch Magneto Co., Ltd., under Canadian laws; authorized capital, $25,000; to manufacture machinery. Corporators—F. D. Norman, W. J. Boland and others.

Brockton, Mass.—White Automobile Co., under Massachusetts laws; authorized capital, $30,000. Corporators—Boland Litchfield, Samuel J. Freedman, Pauline H. Simons.

Chicago, Ill.—Ross Sleeve Motor Co., under Illinois laws; authorized capital, $20,000; to manufacture motors, engines, etc. Corporators—F. W. Bull, E. Lundbland, A. S. Lytton.

Montreal, Can.—Major Automobile, Ltd., under Canadian laws; authorized capital, $50,000; to manufacture motor cars. Corporators—George A. Major, Alexis Frappier and others.

Chicago, Ill.—Dimmer Co. of America, under Illinois laws; authorized capital, $21,000; to manufacture motor car devices, etc. Corporators—A. A. Pentelis, O. O. Weidner, John H. Lally.

Detroit, Mich.—Cowles-McDowell Preumobile Co., under Michigan laws; authorized capital, $4,000,000; to manufacture motor cars. Corporators—Irving Cowles, E. H. MacDowell and others.

Cincinnati, Ohio.—Berk Mfg. Co., under Ohio laws; authorized capital, $1,000; to manufacture automobile accessories. Corporators—E. P. Berk, Dora Berk, E. J. S. Berk, H. H. Berk, A. H. Berk.

Philadelphia, Pa.—Quality Rubber & Auto Supply Co., under Delaware laws; authorized capital, $25,000. Corporators—F. R. Hansel, Philadelphia; G. H. B. Martin and S. C. Seymour, both of Camden.

Chicago, Ill.—A. A. & M. B. Stevens Co., under Illinois laws; authorized capital, $5,000; to conduct a storage, livery and garage business. Corporators—John S. Chenneour, Avery A. Stevens, Edward J. Kelly.

Hartford, Conn.—John J. Roche Co., under Connecticut laws; authorized capital, $50,000; to operate a garage. Corporators—John J. Roche and Carroll F. Roche, of Hartford; Henry W. Nuckols, West Hartford.

Chicago, Ill.—Consumers' Service Co., under Illinois laws; authorized capital, $20,000; to conduct a general manufacturing, garage and livery business. Corporators—Frederick W. Snider, Ada S. Mitchell, Paul L. Menn.

Morristown, N. J.—Morristown Automobile School, under New Jersey laws; authorized capital, $125,000; to conduct a general automobile business. Corporators — J. O'Gorman, J. J. Lyons, T. E. Lowe, all of Morristown.

New York, N. Y.—Kerosene Carburetor Co., under New York laws; authorized capital, $100,000. Corporators—Louis F. Pelletier, 302 West 111th street; Ernest F. Ciglia and Hilding Anderson, both of 319 West 95th street.

Buffalo, N. Y.—Star Motor Delivery Co., under New York laws; authorized capital, $20,000; to conduct a general trucking and delivery business. Corporators—John B. Corporan, William H. Corcoran and Richard H. Conner, all of 199 Pearl street.

New York, N. Y.—Taxicab Association, under New York laws; authorized capital, $10,000; to conduct a taxicab business. Corporators—L. Horatio Biglow, Jr., 1267 Pacific street, Brooklyn; Alfred L. Loomis, Tuxedo Park; Aksel Wichfield, 16 West 55th street.

St. Louis, Mo.—Bond Automobile Co., under Missouri laws; authorized capital, $10,000; to engage in wholesale and retail buying and selling of motor cars and accessories and to conduct a general repair business. Corporators—Mark W. Bond, Caroline Bond, Charles Kist.

New York, N. Y.—Yorkville Auto Supply Co., under New York laws; authorized capital, $10,000; to manufacture and deal in rubber tires, rubber goods and automobile supplies. Corporators—Sydney Richman, 1235 Lexington avenue; William Yates and A. E. Stacy, both of 1236 Lexington avenue.

Weed Starts One Suit; Ends Another.

The Weed Chain Tire Grip Co. this week filed suit in the United States District Court for the Eastern District of Pennsylvania, sitting in Philadelphia, against George J. Campbell, for alleged infringement of the Parsons patent, No. 723,299, under which Weed chains are manufactured; Campbell manufactured on a small scale.

Shortly before the latter suit was filed, the Weed company secured a decree in its long-contested action in the Federal court in Trenton, N. J., against the Enterprise Chain Co. and William T. Morgan, which made the Morgan grip. The case was bitterly contested when it was filed several years ago, but the decree was taken with the consent of the defendants, who made a cash settlement in lieu of damages.

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EXPORTS REGAIN STRENGTH IN AUGUST; INCREASE 42%

Gain in Number of Cars is 52 Per Cent. — United Kingdom a Leader — Engines and Tires Decline— Total Value $2,843,599.

Despite a tendency to sag during recent months, the exportation of cars from the United States to foreign countries during the month of August regained their former strength and advanced by 52 per cent. in number and 42 per cent. in value; another noteworthy detail of the record prepared by the Federal statisticians is that the United Kingdom, which decreased its purchases of American cars following the British cry of "American Invasion," is this time within one of being the leader in the gain in number of cars and value.

The United Kingdom's purchases were 348 greater in number and were larger by $274,008, which is an increase of 309 per cent. in number and 273 per cent. in value. This geographic division is surpassed only by Other Countries, in which the increase was 233 cars, or 466 per cent., and $194,211, or 480 per cent. The United Kingdom's advances, however, were larger numerically than any other.

Of Continental Europe, Germany increased its purchases of American cars while France, in number, and Italy entered the loss column by slight percentages. Other Europe, Canada and Mexico did not buy as much as in August, 1912, which is a not inconsequential backward move when it is considered that Canada formerly ranked among the leaders.

South America added 57 cars, or 32 per cent., and $112,919, or 65 per cent., to its record of a year ago; other increases were made by the West Indies and Bermuda, British Oceania, and Asia and Other Oceania. The gain in the total of cars was 683 and $588,150.

Of the increase of 683 in cars, 11 were trucks and the increase in value for these vehicles was $2,192, respective percentage advances of 19 and 2. The gain in pleasure vehicles was 672, or 53 per cent., and $585,958, or 45 per cent. Parts to the value of $454,881 were exported in August, 1913, which is an advance of $23,511, or 5 per cent. over the value of these products for the same preceding month.

Engines and tires failed to make advances. The location of numerous American branch factories in Canada doubtless accounts for the fact that engines are not exported as heavily as heretofore. In August last the number decreased by 527, or 63 per cent., while the value shrank by $53,474, or 65 per cent. The value of the tires exported was less by $28,750, or 6 per cent.

The varying gains and losses served to bring the gain in the total of all products to $529,437, less than the gain in the value of cars alone. This, however, is an advance of 23 per cent. Also, for eight months ending with August the total value increased over the same period of 1912 by $4,777,966, or 20 per cent.

While the exports are increasing in number and in total value the average value per car continues to keep pace with the general lessening in the price of automobiles. In August, 1912, the average value of the pleasure cars shipped abroad was $1,019, while in that month of 1913 the average value was $968, a decrease of $51, or 5 per cent. The average value of the trucks in August, 1912, was $1,881 and in August, 1913, $1,609, a decrease of $272, or 15 per cent. The figures in detail are shown by the subjoined table.

	August				Eight Months Ending August					
	1912		1913		1911		1912		1913	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values
France	51	$35,892	40	$39,453	324	$371,824	481	$368,955	607	$468,586
Germany	58	45,021	70	55,577	79	98,332	310	244,747	831	734,039
Italy	32	21,880	30	19,153	142	175,511	208	191,132	252	217,453
United Kingdom	113	100,090	461	374,098	2,136	1,867,323	3,789	2,840,038	3,431	2,624,138
Other Europe	141	111,592	91	68,308	574	541,803	1,164	971,038	1,389	1,196,415
Canada	320	486,285	274	416,181	3,941	4,239,702	5,517	6,740,174	5,007	6,705,222
Mexico	25	35,289	18	32,923	162	276,733	150	218,309	160	288,210
West Indies and Bermuda	19	22,645	36	34,325	193	230,611	215	230,948	322	321,163
South America	174	172,916	231	285,835	536	726,309	1,245	1,461,459	1,963	2,249,163
British Oceania	226	212,544	284	228,389	1,261	1,153,744	2,354	2,161,049	2,157	2,056,079
Asia and Other Oceania	112	108,897	186	192,748	554	566,986	955	987,575	1,631	1,602,835
Other Countries	50	42,548	283	236,759	183	194,612	428	398,347	1,444	1,281,179
Total cars	1,321	$1,395,599	2,004	$1,983,749	10,085	$10,443,490	16,816	$16,813,771	19,194	$19,744,482
Commercial†	57	107,245	68	109,437			‡135	‡263,703	730	1,260,086
Passenger†	1,264	1,288,354	1,936	1,874,312	10,085	10,443,490	‡2,821	‡2,834,533	18,464	18,484,396
Parts*	.....	431,370	.....	454,881	.....	2,207,981	.....	3,325,123	.....	3,985,658
Total cars and parts*	1,321	$1,826,969	2,004	$2,438,630	10,085	$12,651,471	16,816	$20,138,894	19,194	$23,730,140
Engines	613	81,412	86	27,938	‡168	‡20,950	6,316	724,135	7,757	1,229,481
Tires	.....	405,781	.....	377,031	.....	1,715,322	.....	2,240,826	.....	2,922,200
Total value all products	.....	$2,314,162	.....	$2,843,599	.....	$14,487,743	.....	$23,103,855	.....	$27,881,821

* Does not include engines and tires. † Not separately stated prior to July 1, 1913. ‡ Covers only last half of year.

AUGUST IMPORT STATISTICS INDICATE GENERAL DECLINE

Not One of Foreign Car Manufacturing Countries Makes Gain Over Preceding August — Decrease of 60% in Valuation.

The record of the importation of foreign cars into the United States during the month of August just passed probably differs from the record of any preceding month—any recent month, at least—in that none of the geographic divisions or countries from which the cars are shipped gained over the same month of the preceding year. There are five divisions, according to the Federal statisticians, and every one of them lost. Germany shipped three cars in each month but it lost in value.

The losses in number were: France, 23.70 per cent.; United Kingdom, 9, 69 per cent.; Italy, 1, 20 per cent.; Other Countries, 2, 17 per cent. In value the shrinkage was: France, $60,431, 73 per cent.; United Kingdom, $22,540, 71 per cent.; Germany, $2,492, 44 per cent.; Italy, $2,776, 25 per cent.; Other Countries, $5,789, 24 per cent. Parts decreased by $15,656, or 46 per cent. The total of cars decreased by $35, or 53 per cent., and by $94,028, or 60 per cent. For eight months ending with August the loss was 182 cars, or 34 per cent., and $407,808, or 33 per cent. The figures follow:

	August			
	1912		1913	
	No.	Values.	No.	Values.
France	33	$82,639	10	$22,208
Germany	3	5,705	3	3,213
Italy	5	10,899	4	8,123
United Kingdom	13	31,684	4	9,144
Other Countries	12	24,300	10	18,511
Total	66	$155,227	31	$61,199
Parts (except tires)	..	34,131	..	18,475
Total cars and parts	66	$189,358	31	$79,674

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In the RETAIL WORLD

Thomas Savage, of Parkersburg, W. Va., plans to open a garage.

Frank M. Nutter has entered the trade in Atlantic, Ia. He is marketing a tire filler.

Henry Cartier and Frank Lewis are erecting a garage and machine shop in Freeland, Mich.

E. W. Fawley and J. D. Langdon, of Waterville, Wash., have entered the trade; they have the Hupmobile agency.

The Meeley Rubber Co., of Philadelphia, Pa., has completed a tire repair plant; it is located at 660 North Broad street.

James P. O'Gorman, of Morristown, N. J., is about to erect a garage; he plans to build it at South and Boyken streets.

H. D. LeCate, of Camden, N. J., is about to erect a garage; he has secured a site at King's highway and White Horse pike.

Mortimer Evans, of Elwood City, Pa., plans to erect a garage on 5th street; it will represent an expenditure of $4,000.

A three-story garage is to be erected in Glens Falls, N. Y., for the Adirondack Motor Car Co.; the site is on Main street.

L. C. Houck, of San Antonio, Tex., is about to open a garage; he is remodeling the Star Theater building for that purpose.

The Clayton (N. Y.) Motor Supply Corporation is erecting a new building; it will be ready for occupancy about October 20.

W. J. Crowell, J. A. Rose and C. H. Garman, of Charlotte, N. C., have established an agency; they represent the Haynes line.

The Burton-Rounsaville Tire Co., of Los Angeles, has dissolved; R. W. Burton has turned his interest over to L. S. Rounsaville.

The Andrews-Dykeman Co., of Boston, has opened a new sales and service station; the building is located at 43 Warren avenue.

The Tibbals-Gavin Co., of San Diego, Cal., has changed its name to Gavin-Williams Co. It is an accessory and supply dealer.

James Hillard, of Philadelphia, Pa., has awarded the contract for a new two-story garage, to cost $4,700; it will stand at 1710 Venango street.

W. O. Taylor, of Toledo, Ohio, has purchased the holdings of R. R. Browne in the Erie Supply Co. This gives Taylor a controlling interest.

The Poughkeepsie (N. Y.) Utilities Co. has taken possession of new quarters on Mechanics' court; the company handles supplies and accessories.

Gerdes & Elken have taken over the Humboldt Auto Co. and the Lynch Auto Co., both of Humboldt, Neb. Each operated a garage and agency.

J. E. Smith, formerly a liveryman in Houston, Tex., has been granted permission to operate a garage; the location is at Henderson and 6th streets.

E. H. Carpenter, formerly general manager of the Sacramento (Cal.) Star, has entered the automobile trade; he has opened a supply store at 1123 J street.

W. C. J. Warner, formerly a Goodyear tire man, and James MacSwain, formerly connected with the Batavia line, have opened a tire agency in Boston, at 68 Huntington avenue; they have the Quaker representation.

The Gorges & Blieck Automobile Co., of East College avenue, Appleton, Wis., has been dissolved; Blieck has retired from the business, which will be continued by A. H. Gorges. The firm handles Cadillacs and operates a garage.

The W. W. Wertz Auto Co., of Lincoln, Neb., has bought out the Lincoln Auto Co., one of the oldest trade concerns in that city and whose members are retiring from business; the price is $30,000. The Wertz company stocks Studebakers.

Arthur Hertz, who recently secured the Hupmobile agency in Seattle, and William T. Patten, who has handled Whites for some time, have combined their interests under the style William T. Patten Motor Car Co. They are temporarily located at 525 Olive street.

W. H. McIntyre, formerly of the Landman-Griffith-McIntyre Co. in Toledo, Ohio, has formed the W. H. McIntyre Co. and has opened salesrooms at 307-11 10th street, Toledo; he has the Detroiter distribution for 20 counties of Northwestern Ohio and a part of Southern Michigan.

The Perrett-Barber Motor Sales Co. has taken over the Barber Motor Sales Co., which previously handled Detroiter cars in Michigan; the company has 50 subdealers and its officers are: President, William M. Perrett; vice-president and treasurer, Zach Barber; secretary, H. J. Latour. Perrett, who thus enters the car business, previously was one of the landmarks of the tire trade.

John F. McLain, who has been manager on the Pacific Coast for the Franklin Automobile Co. since 1909, and who also combined with that position the management of the company's San Francisco branch, has taken over the branch as a dealer; he will operate as the John F. McLain Co.

Townsend & Hine, of Evansville, Wis., has been dissolved; Bruce Townsend has disposed of his interest to J. H. Hyne and his son, who will operate as Hyne & Son. Townsend will engage in the garage business in Madison, Wis., locating in the Lemmel building. He also will open salesrooms.

The A. P. Mitchell Auto Co., of 701 Commerce street, Fort Worth, Tex., has been reorganized with A. P. Mitchell as president, Earle M. North vice-president and E. L. Malone secretary-treasurer; it will be capitalized at $15,000. The company, which entered the trade four years ago, will continue to handle Studebaker and Cadillac cars.

L. A. McKay, formerly district manager for the Franklin Automobile Co. in nine States and Manitoba and Saskatchewan, has become the Franklin dealer in Minneapolis; prior to his district managership he handled sales west of the Mississippi and was stationed at the factory in Syracuse. McKay is a native of Nebraska and graduated into automobiles from bicycles.

The Reeke-Osmond Motor Car Co. of Milwaukee has been organized in that Wisconsin city by Alfred Reeke and Norman E. Osmond, respectively manager and sales manager of the Milwaukee branch of the Thomas B. Jeffery Co., of Kenosha, Wis. The company is capitalized at $50,000 and, it is said, plans to take over the Rambler branch, located at Broadway and Milwaukee street.

The Northwest Haynes Auto Co. has been formed in Minneapolis and will handle the Haynes business in that territory, with headquarters at 1012-14 Hennepin avenue; it is capitalized at $50,000. The officers are: President, A. C. Porter; vice-president, Jos. William Gray; secretary and treasurer, John N. Knutson. Porter and Knutson have been connected with the trade in that territory for some time.

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PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

E. H. Chase, Jr., has been appointed sales manager of the Lyons-Atlas Co., of Indianapolis. Previously he was sales manager of the Olds Motor Works branch in Louisville, Ky.

E. G. Soward, previously connected with the Thomas B. Jeffery Co., has been appointed manager of the new business department created by the Velie Motor Vehicle Co., of Moline, Ill.

George H. Matheson has been appointed purchasing agent of the Keeton Motor Co., of Detroit. Until its failure, Matheson was identified with the Wilkes-Barre (Pa.) company which bore his family name.

Melville A. Pollock has joined the advertising department of the Locomobile Co. of America, of Bridgeport, Conn. Previously he was advertising manager of the Taylor Instrument Co., of Rochester, N. Y.

Henry Tuttle, formerly identified with the Stoddard-Dayton and Howard Motor Car companies, has joined the sales staff of the Lyons-Atlas Co., of Indianapolis. He is now covering New England, placing agencies for the Lyons-Knight tire.

After eight years' service, during three of which he served as assistant sales manager, George H. Cox has retired from the Thomas B. Jeffery Co.'s service. He has no plans for the immediate future, but intimates that he may enter the jobbing trade.

E. M. Lamb, former manager of the service department of the Gramm Motor Truck Co., of Lima, Ohio, has been transferred to the service department of the Gramm Canadian company. He, of course, will remove to Walkerville, Ont., where the Canadian factory is located.

Having disposed of its Chicago retail branch to Lafayette Markle, who previously also managed the wholesale department, the Studebaker Corporation has appointed B. T. Kinsman manager of the latter. Formerly he was in charge of the Studebaker branch in Buffalo. The vacancy in the latter city has been filled by the appointment of Joseph O. Hahn.

After a brief absence, Fred E. Dayton, former sales manager of the United States Motor Co.'s Columbia department, has returned to the automobile industry. This time, however, he has gone into tires instead of cars, having been appointed assistant to J. C. Matlack, sales manager of the Ajax-Grieb Rubber Co. In connection with his other duties, he will handle Ajax advertising.

N. E. Wahlberg has been promoted to the post of chief engineer of the Oakland Motor Car Co., of Pontiac, Mich. He has been the company's assistant engineer for some two years and before entering its service had been connected with the engineering departments of the Packard and Thomas establishments. He succeeds F. H. Berger, who is preparing to go to Europe for a stay of several months.

Henry W. Nuckols, for many years identified with the Columbia car and president of the Columbia Motor Car Co., of Hartford, Conn., at the time its owner, the United States Motor Co., went into bankruptcy, has been appointed assistant to M. J. Budlong, president of the Packard Motor Car companies of New York, Philadelphia and Chicago. Budlong and Nuckols are old acquaintances and, naturally, were in close company when Budlong himself was the head of the Columbia company, long before it was taken into the United States Motor fold.

Minor Business Troubles.

Morris H. Wilcher, a dealer in Rock Island, Ill., has filed a petition in bankruptcy; he states that his assets are $2,449.60 and his liabilities $4,629.34. The greater portion of his assets are accounts.

The Milwaukee (Wis.) Oil Pump & Tank Co. has filed a petition in bankruptcy; its assets are $7,717.31 and its liabilities $8,026.23. The company manufactured oil and gasolene tanks with automatic pumps for garages and operated a factory at 259 Clinton street. Arthur E. Riess is president.

Adam H. P. Sechrist, of York, Pa., has been adjudicated a bankrupt in the Federal court in Scranton; he operated at 243 South George street, York, as the Pennsylvania Auto Co.

As a preliminary to the winding up of the affairs of the Oldsmobile Co., of Cleveland, Ohio, a receiver was appointed last week upon application of J. J. Schmitt, a stockholder, who claims the company's liabilities are $3,000 and that all its assets will not net more than $4,000. The company, which is not connected with the Olds Motor Works, of Lansing, Mich., the maker of Oldsmobiles, is capitalized at $50,000.

Orville E. Short, of 250 West 54th street, New York City, a dealer in carriages and automobiles, has filed a petition in bankruptcy, citing as a reason his connection with the Michigan Motor Car Co., which is in bankruptcy and with which he had a running account for the last five years; he states that his liabilities are $65,280 and his assets $25,039, consisting of stock, $175, and accounts, $24,865. The Michigan company is put in the schedules as a creditor for $26,704 and there also appears an item of $31,857 in notes given by Short and discounted by the Michigan concern, the present holders of which are not known. This company also appears as debtor to Short to the extent of $17,000. Short had been in business 21 years, is interested in several companies and was president of the Auto Body & Taxicab Co.

Recent Losses by Fire.

Marshalltown, Ia.—R. B. Herr; garage destroyed. Loss not stated.

Dallas, Wis.—D. A. Russell; garage and warehouse destroyed. Loss, $5,000.

Palo Alto, Cal.—G. Bracchi; garage and one car destroyed. Loss not stated.

Dallas, Tex.—Buick Auto Co., Pearl and Commerce streets; garage damaged. Loss, $1,000.

Rockport, Mass.—Cape Ann Tool Co., manufacturer of automobile supplies; plant destroyed. Loss, $30,000.

Detroit, Mich.—Detroit Auto Specialty Co., 911 Greenwood avenue; enameling plant destroyed. Loss, $8,000.

Mosler-Lurie Plug Appeal Argued.

The Canfield spark plug patent, No. 612,701, granted October 18, 1898, and held by A. R. Mosler & Co., made another fight for life this week in the United States Circuit Court of Appeals in New York City, when the appeal was argued in an action brought by Mosler against John Lurie, trading as the Automobile Supply Co. in New York City. The action was decided adversely to Mosler last October in the lower court, whereupon this company carried it higher in an effort for a final adjudicatiton. The patent is claimed to cover all plugs having deep recesses around the electrodes. The burden of the defense is generally understood to be borne by the Rajah Auto Supply Co. and C. A. Mezger & Co.

Eleven More Added to M. A. M. Roll.

Eleven more applicants have been elected to membership in the Motor and Accessory Manufacturers, Inc., as follows: Cleveland Tanning Co., Cleveland, O.; Racine Mfg. Co., Racine, Wis.; Benford Mfg. Co., Mt. Vernon, N. Y.; Gemmer-Detroit Starter Co., Detroit, Mich.; McGraw Tire & Rubber Co., East Palestine, O.; J-M Shock Absorber Co., Philadelphia, Pa.; F. S. Carr Co., Boston, Mass.; Torbensen Gear & Axle Co., Newark, N. J.; Taylor Instrument Co., Rochester, N. Y.; Reynolds-Browne Co., Chicago, Ill.; Knight Tire & Rubber Co., Canton, O. These additions bring the total membership of the organization up to 258.

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MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit. Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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OVERLOADING AND TIRE LIFE.

With wise minds already bent—or soon about to be bent—upon a solution of the problem of tire wear with heavy commercial vehicles, it would seem that there is at least one phase of the question to which little if any attention has been paid. Except the purveyors of coal, and possibly a few other commodities that are sold, or transported by weight and not by bulk, there are very few owners or operators of motor trucks who know with a sufficient degree of accuracy to be valuable the exact load weight.

It is a fact that much of the instruction offered by commercial makers and the makers of tires hinges about the admonitions not to overload and not to overspeed, and while it is comparatively easy to insure positively against overspeeding it is by no means as simple to prevent overloading, though one evil is, manifestly, as great as the other. Placing credit where credit is due, they arrange these things better on the other shore of the Atlantic than they do in America. In England, for instance, not only is the legal rate of speed prescribed—and a great deal more rigidly enforced than is the case in America—but the weight supported by each axle of a loaded vehicle must be registered with the authorities and marked on the body in plain figures, and due to a healthy regard for the activity of the police in unexpectedly checking axle weights mitigates very effectually against the overloading evil.

It is these stringent police regulations of heavy motor traffic and their rigid enforcement that have been responsible for the development of a number of foreign devices which are in effect combination lifting jacks and weigh scales, and they are understood to be in very considerable use. Thus, the police department, in protecting itself, has forced the users of commercial vehicles to protect themselves by making certain that their vehicles are not overloaded.

But the method of the coal dealer is much simpler than is police regulation. Nine-tenths of the users of motor trucks never go to the trouble of weighing their loads and until they do so no amount of careful driving can be expected to increase tire life by any appreciable amount.

SPEEDING THE AGRICULTURAL TRACTOR.

The light agricultural motor tractor, capable of doing the work of one or two horses, and for which an enormous future seems probable, is making gradual progress. Manufacturers, both great and small, are seeking to perfect it; companies are being formed almost weekly, but much remains to be done, not only mechanically, but in the way of convincing demonstration. For the introduction of motor plows and the like is not altogether easy. Farmers, as a rule, are not fools, caricaturists to the contrary notwithstanding, but are conservative in matters pertaining to their own business. The farmer wants to be shown, and shown conclusively.

Just what constitutes a farmer's idea of being shown is plainly indicated by the remarks of one of a number of New York State farmers who have discussed rather thoroughly the practical aspects of agricultural motor service.

"Manufacturers of motor plows have tested their machines," he said, "and according to their own reports the tests have been very satisfactory. No doubt they were satisfactory, for the operators were thoroughly familiar with the machines and knew what to expect from them under given conditions, and what to do in all cases. But a small farmer who has to look at least twice at his money before spending it must know what a machine will do in unfamiliar hands and, further, what it will do day after day in actual farm service. Short tests, however strenuous, in expert hands will not convince many farmers. And it must be shown that the tractor is sufficiently economical not only to make its cost worth while, but also to compensate for the fact that it cannot displace in practice as many horses as in theory, for horses must be maintained for road work.

"The manufacturer should place machines in the district in which it is desired to make sales, putting them to work in the hands of average farmers and leaving them for a month or six weeks. The operation should be in the hands of farmers, the experts within reach but keeping their hands off."

Such tests would arouse genuine interest, and a successful outcome would mean business, for farmers who could not be convinced by the strongest printed arguments and reports would be bound to credit their own observations, and self-interest could be depended upon to do the rest.

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KLAXON CONTEST A COURSE IN HORNOLOGY FOR PUBLIC

Will Award Prizes for Best Regulation for Warning Devices—Limits Competition to Bay State and Caters to Schools and Granges.

It is not improbable that by November 20 the population of Massachusetts will know considerably more than it does now about automobile warning signals and their regulation and, incidentally, about the Lovell-McConnell Mfg. Co., of Newark, N. J., the maker of Klaxon horns. This result, the Klaxon company hopes, will be accomplished through a contest it is promoting in the Bay State, the announcements having been sent for distribution in public schools, Granges and all general court offices.

The contest offers $250 for "the best seven suggestions as to how to regulate the use of warning signals on automobiles, divided as follows: First, $150; second, $50; next five, $10 each. A four-page folder which carries the announcement enters into a discussion of the necessity of adequate warning signals, tells of their use and misuse, their functions and the regulations which have been adopted in various States and cities. Chicago's solution of the problem is regarded as the best thus far, it calling for "an abrupt note sufficiently loud to serve as an adequate warning," but to be used only as a warning signal. The warning signal has come in for attention in numerous municipalities and the remedial measures that have been devised vary. Some, which were short-lived, prohibited some of the better known mechanical types and, on the whole, the question has been a poser.

Suggestions are to be addressed to the Warning Signal Committee, drawer 2302, Boston Post Office, and must be mailed prior to November 20. In case of a tie priority of postmark will determine the standing. The awards will be announced between December 1 and 10. Each competitor must be a resident of the State of Massachusetts, must not exceed 400 words and must write on one side of the paper only.

The educational character of the contest is indicated by the personnel of the committee of judges, which comprises: William L. Douglas, Brockton, former governor of Massachusetts; James A. Gallivan, chairman of the Board of Street Commissioners of Boston; George S. Ladd, Sturbridge, a member of the executive committee of the Massachusetts State Grange and of the Bureau of Highways of the United States Department of Agriculture; Daniel F. Gay, Worcester, a director of the Automobile Legal Association, former president of the Worcester Automobile Club, and a director of the American Automobile Association.

S. A. E. Schedules its Winter Meeting.

The dates for the annual winter meeting of the Society of Automobile Engineers were definitely decided at the meeting of the Council which was held last week at the headquarters of the society in New York City. Following a new plan that is expected to relieve somewhat the monotony of continuous business sessions, it is planned to leave a whole day free between the two principal sessions. A social gathering to inaugurate the meeting will be held at the Manhattan Automobile Club on Sunday afternoon, January 4th; no business will be transacted. The following Monday morning will be devoted to a meeting of the Standards Committee in the S. A. E. headquarters and the business meeting proper will not be taken up until Tuesday morning, January 6th, at Grand Central Palace; three sessions will be held during the day—morning, afternoon and evening—and the same program will be carried out on Thursday, January 8th, leaving Wednesday, the 7th, free. As usual, the meeting will be drawn to a close with a banquet on Thursday night, though it has not been decided where the "spread" will be served.

"Move-on" Ordinance Stirs Milwaukee.

To protest against three ordinances which become effective October 27th, most obnoxious of which is one which would prohibit the owners of cars letting them stand longer than is necessary to receive or discharge passengers between the hours of six in the morning and seven in the evening in a zone virtually in the heart of the business section of the city, the Milwaukee (Wis.) Automobile Club has called a mass meeting for Thursday evening next, when a fight against the measures on the ground of unconstitutionality will be outlined. The second ordinance prohibits any one letting cars stand on any street for more than 45 minutes, and it therefore is considered ambiguous. It has a redeeming clause, however, which prohibits pedestrians taking "Dutch cuts" across the streets under penalty of fines ranging from $5 to $50. The third ordinance makes the emission of smoke and odors a punishable offense.

Y. M. C. A. Takes Over Engineers' School.

The New York School of Automobile Engineers has been taken over by the Automobile School of the West Side Y. M. C. A., which also has conducted a course in automobile instruction; both students and equipment have been moved to the Y. M. C. A. headquarters at 8th avenue and West 57th street. The school was opened in 1905.



*Indicates Sanction by A. A. A.

Oct. 15-25, New York City—Annual electrical exposition and electric vehicle show in Grand Central Palace.

Oct. 17-18, Chicago, Ill.—Chicago Motor Club's annual amateur vs. Trade reliability tour.

Oct. 17-27, Paris, France—Annual automobile salon.

Oct. 18-19, St. Louis, Mo.—Track racemeet under auspices of J. A. Sloan.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Oct. 27-28, Chicago, Ill.—Annual Convention of the Electric Vehicle Association of America in Hotel La Salle.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 9-12, Shrevepeort, La.—Track racemeet under auspices of J. A. Sloan.

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

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TURNER TOPS MOUNT FALCON IN RECORD BREAKING TIME

At Wheel of Maxwell He Cuts Existing Time for Rough Flight Virtually in Half, in Spite of Near-Accident—The Results.

Whirling up the rough sides of Mount Falcon, which is not very far from the city of Denver, in Colorado, W. H. Turner, at the wheel of a Maxwell, very easily won first place in the hill climb promoted by the Denver Motor Club on Saturday, 11th inst. Not only did Turner finish first, climbing the 3½-mile 20 per cent. grade in 11:32⅖, but he, and every one of the other six contestants, totally eclipsed the best previous record for the climb, which was made last year and which stood at 22 minutes flat. William Thorney, in a Chevrolet, was second, his time being 14:33⅖, and Bert Clark, at the wheel of a diminutive Ford, was third in 14:46⅖.

Although Turner won first prize easily enough, as far as his time for the flight was concerned, he did not have such an easy time making the ascent and once he came very near to losing not only the prize but his car and his life, too. In attempting a sharp right-hand turn, situated about half way up the grade, at too high speed, Turner skidded badly and for an instant one rear wheel hung over 1,500 feet of perfectly good mountain air; the momentum of the car was sufficient to carry it back onto the road, however, and no damage was done ,except to Turner's nerves.

The contest is an annual one and, as such, always serves to draw out a good crowd of spectators, the majority of whom congregated on the broad verandas of the club house which is at the starting line of the climb. This year, Governor Ammons himself, together with Mrs. Ammons and their daughter, were the guests of honor, the Governor acting in the capacity of honorary referee. The names of all the contestants, with their times and the order of finish, is as follows:

Driver and Car.	Time.
W. H. Turner, Maxwell	11:32⅖
William Thorney, Chevrolet	14:33⅖
Bert Clark, Ford	14:46⅖
Frank Nelson, Metz	15:02⅕
E. H. Ball, Franklin	17:31⅕
Frank Greenlee, Hupmobile	17:42⅘
J. A. Landing, Case	17:45⅖

Vincennes Meet Breeds Bad Accident.

In a racemeet that was held on the track at the Vincennes (Ind.) fair grounds on October 8th, Hugh Lewis, a local pilot who is reputed to be wealthy, was probably fatally hurt in a preliminary try-out when his car got beyond his control and crashed through the fence after proceeding sidewise for 25 or 30 feet. Jack Lanahan, who was on the track at the time and was going at good speed, collided with the wrecked car but escaped unhurt. Lewis sustained three fractured ribs and internal injuries, from which he is not expected to recover.

Springfield Fence Side-Swiped by Endicott.

William Endicott, more familiarly known by those who attend State fair automobile recemeets as "Wild Bill," furnished most of the thrills that were not furnished by Disbrow at a racemeet in Springfield, Ill., on Saturday, 11th inst. Endicott's thrill, or rather thrills, for they lasted some time after the accident, resulted from an encounter with the fence in which the fence came out a little the worse for wear, as did the Case car Endicott was driving at the time. Endicott, however, escaped with bruises, and the event, which was a five-mile exhibition race, went to Delloyd Thompson, a local pilot. Disbrow's thrills were given in the usual way. Which is to say, he drove his Simplex against time for a mile and was clocked in 50 seconds flat, and later whirled two laps of the track in the same car in 1:40⅕.

Guest in Car Rides at His Own Risk.

Again it has been decided that the man who accepts an invitation to ride in the car of another does so at his own risk and cannot collect damages in case he is injured in an accident to the automobile—this time the decision was rendered by the Supreme Court of Wisconsin in the case of M. J. Hannon, of Green Bay, against the Van Dycke Co., a real estate company in the same city. Hannon was awarded damages by the lower court and the Supreme Court reversed the decision.

The Van Dycke Co. hired a car to take Hannon into the country to see a farm it was offering for sale, and on the journey homeward the car met with an accident in which Hannon was thrown from the car, breaking both his legs. He asked damages of $2,500.

One Elgin Race Damage Suit Dropped.

Because Dr. Francis W. McNamara, of Chicago, was tardy in the prosecution of a $25.000 damage suit he had brought in Elgin, Ill., against the Elgin Road Race Association, Philip Freiler, Allen Retan, W. J. Gilbert and W. H. Goetting, members of the association, for injuries sustained when the grandstand collapsed during the 1911 races, the action was dropped fromthe calendar last week. A suit on behalf of Dr. McNamara is on file in Chicago against the Elgin Road Race Association, the Chicago Motor Club and Contractor McHugh, who built the stand.

MOTOR CLUB IS VICTORIOUS FIRST TIME IN SIX YEARS

Chicago Motorists Defeat Their Athletic Club Rivals by Sixteen Points in Tour that Proves Mudlark —Gain Both Trophies.

For the first time in six years, the Chicago Motor Club triumphed over the Chicago Athletic Club in the annual inter-club reliability run that each year brings teams from each organization to fight for the Allan S. Ray and Carlton White trophies. The run, which was held on Friday last, 10th inst., led the two teams of 11 cars each to Hudson Lake, Ind., and return, and outside of the fact that it was won by the C. M. C. members, was distinctive by reason of the appalling amount of mud the cars plowed through and carried back to the Windy City.

On the outward bound trip, fair weather smiled on the tourists and no black marks were doled out. But soon after the return journey was started the "rain came down in slanting lines" and turned the country roads into morasses, cut up with crevasses, and made them nearly as slippery as the fabled glass mountain. On the C. M. C. team, R. L. Parker drew nine of the 10 points demerits for failing to let his engine run while changing a tire, and A. M. Robbins drew the other one for being one minute late at control. On the C. A. C. team, W. B. Simpson took on water out of control, which cost him six points; F. E. Mann lost himself on the roads and drew 19 points, and L. Jacques drew the remaining one point for letting his motor "die" at a railroad crossing.

The complete score is as follows:

Chicago Motor Club.

Driver and Car.	Penalty.
J. E. Callender, Edwards-Knight	0
G. F. Ballou, Apperson	0
C. G. Sinsabaugh, Chalmers	0
W. D. Morris, Winton	0
J. Debitts, Buick	0
P. E. Ennie, Marmon	0
O. B. Duncan, Fal.	0
T. J. Hay, Hupmobile	0
J. T. Brown, Velie	0
A. M. Robbins, Alco	1
R. L. Parker, Stearns-Knight	9
Total	10

Chicago Athletic Club.

C. T. Kniseley, Diamond T	0
W. F. Grower, Diamond T	0
W. C. Thorne, Locomobile	0
N. H. Van Siclen, Cole	0
C. F. Meyer, Peerless	0
S. W. Hamm, Cole	0
H. B. Staver, Staver-Chicago	0
S. E. Hibben, Packard	0
L. Jacques, Peerless	1
W. B. Simpson, Packard	6
F. E. Mann, Locomobile	19
Total	26

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ORGANIZATION OF ONESELF

What Is Good for the Factory or Sales Force Is Good for the Individual—Big Corporation Advises Its Salesmen to Give Selves Orders.

"Ad" West is a "York State" builder and contractor who is accredited with a capability for doing good and thorough work; one of the characteristics which is at the root of his mechanical success is a belief in organization. If he starts on a job he believes in getting his tools on hand and his work arranged, whereupon he proceeds to the task and does it in the shortest possible time.

One day he was eating his lunch from his tin dinner pail in the attic of a partially completed building, but he didn't seem to be getting along just right. Finally he exclaimed, "Hell! No wonder! I ain't organized." With that he set one saw horse next to the wall, set another a few feet in front of the first, laid a plank across the two, set the dinner pail between his legs, leaned against the wall and finished his dinner in comfort. Even in this semi-pleasure he had to be organized.

"No Verbal Orders" Good for the Man.

Organization of one's self in much the same manner often is effective when the organizer, upon a little self-inspection, finds that he is not working up to his possible efficiency. To its salesmen the National Cash Register Co. recommends self-given orders and self-organization and suggests the writing down of things to do and not to do.

"What did I do yesterday which I ought not to have done, and what ought I to have done yesterday that I did not do, and what shall I do today?" it says.

"In order to get the best results I must put down in writing things I plan to do or else I will forget them. Now, at the factory they used to forget many things, and so they issued an order, 'Verbal Orders Don't Go!' If it was a good thing for the factory to issue to all of its people an order that 'Verbal Orders Don't Go,' then it is a good thing for me to issue written instructions to myself—for what was a good thing for a great many people is a good thing for the individual. So I will put down on one side the things I must eliminate from my daily routine, and on the other side the most important things I must do, because the first thing for me to do is to organize my own self, and I have never done that. I have never formed rules for the government of myself, rules which will get the greatest results with the least effort.

"There is no reason why I can't double my results in the same time, and be happier and better, if I only organize myself."

TURNING TESTIMONIAL LETTERS TO THE GREATEST ADVANTAGE

Did you ever try the helpful effect of a few red-hot testimonial letters from persons who have bought cars from you? Some of the letters are sure to boost the car, others are just as likely to touch on the efficient service that is back of it, and perhaps say a few words about the pleasure of dealing with such a live concern.

Securing Testimonials Not Difficult.

If you are doing business on the level and marketing the right sort of car, it is not hard to secure the kind of testimonial letters that count—and count big. Pick out a few "sizzlers" from those you get, and mount them in neat black frames the exact size to accommodate a regular size letter sheet (8½ x 11 inches) and hang them on the walls of your salesroom. You will be surprised and pleased at the result.

There is something magnetic about a letterhead and a signature. Hang it where it can be seen and it draws people towards it. They just naturally want to see what it says. Try the plan and see how it works. The Bemb-Robinson Co., Detroit, agents for Hudson cars, have four or five framed testimonial letters in their salesroom and their experience is that it pays.

WHY THE SALESMAN WISHES HIS HOUSE WOULD ADVERTISE

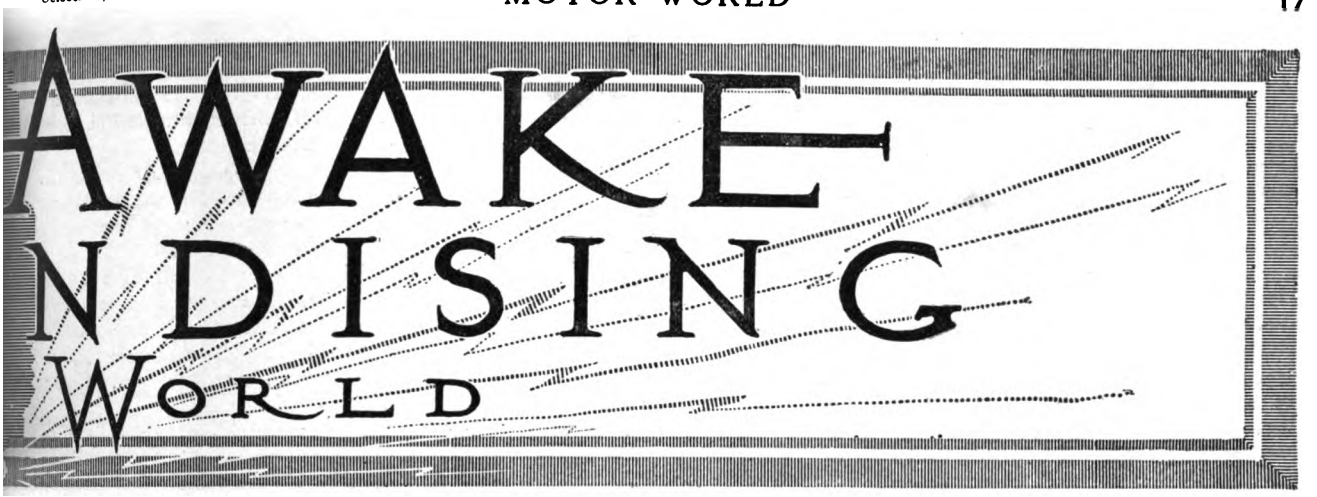
"No, sir! I never allow my customers to overstock on my goods, and I never let them buy anything I think they cannot sell," declared a successful jobber's salesman. "The result is my customers regard me as a friend and I rarely call on one without getting an order. My house is one of the originals in the business and thinks it is too well known to need advertising or to try to build up trade along modern methods, so it is up to the salesman to do everything that will make himself solid with the customers.

May Be Forgotten Without Advertising.

"Competition? Yes, there is quite a bit of it; 27 men on the road in this territory calling on the same dealers make things pretty lively, but our house has a reputation for dealing squarely with its customers that is worth a lot of money. But, I do wish they would advertise; if the 'old man' would go on the road again for even one month he would realize what a great boost it would give every man working for him. I like my concern, but I cannot help feeling that they are missing a great deal by sticking so closely to those old-fashioned policies.

"The 'old man' is not stingy; he simply thinks that everybody knows us because we are one of the 'originals'; he forgets that the trade is constantly changing and that the new ones never heard of us. I certainly would like very much to see him loosen up a little."

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"KICKER" SELDOM A WORKER

Dealer Who Is Trouble to Factory Does Not Rank With "Live Ones"—Large Retailer Points Out One of Dealers' Greatest Failings.

"The main thing in closing a contract with a dealer is to know how much weight he carries in his community; most troubles are not with the line but with the dealer." So says a big dealer who has been selling cars for a long time and who handles a number of sub-dealers.

"The dealer who is always kicking is the dealer who does very little real work," he adds. "He has been sitting back waiting for someone to make a sale in his territory —and someone is sure to make it—if he doesn't; when this happens he gets into action for a share of the commission. Half the kicks that come into this office come from just that sort of dealers. Fortunately the number, as far as we are concerned, is being lessened all the time, because we do not want that kind of dealers.

"Live" Dealer Generally Helps Self.

"Factories spend an awful lot of time and money 'protecting' dealers and keeping them in business when they are 'dead ones.' The amount of money wasted this way is stupendous. The only fellow you have to send your road man out to help is a 'dead one'; you never have to spend time and money helping the live one; he helps himself, and that's why he is alive.

"The 'dead' dealer is always in trouble; his competitors are cutting prices or doing something else that stops him from getting business; he has a million excuses for not making good. Like the poor salesman, he can think of a thousand reasons why he did not make the sale. If he would only spend his time thinking of one good reason why he should make it and then go after it, there would be some purpose in his thoughts.

"Every salesman and dealer who has covered any territory to speak of knows that to line up the best dealer—the real worker —the live, wideawake, red-blooded, vigorous business-getter means more for success than anything else."

MAKING THE PROSPECT ARGUE FOR YOUR SIDE OF THE CASE

Making a prospect convince himself that you are right is not an impossible task. The working of the mind of the "other man" is peculiar and an understanding of it is invaluable to the man who sells. The late Mayor Gaynor of New York City was considerable of a philosopher, and in a letter answering a rabid reformer the mayor well explained the wisdom of lack of superlative.

"Did you ever read that part of Benjamin Franklin's autobiography in which he says that the way to convince another is to state your case moderately and accurately," he wrote, "and then scratch your head or shake it a little and say that that is the way it seems to you, but that, of course, you may be mistaken about it; which causes your listener to receive what you say, and, as like as not, turn about and try to convince you of it, since you are in doubt; but if you go at him with a tone of positiveness and arrogance you only make an opponent of him."

EMPTY GASOLENE TANK THAT NEARLY LOST SALE OF A CAR

Keeping the gasolene tank of the demonstrating car filled is an essential that it is well never to neglect. Absentmindedness in this respect nearly lost a sale a few days ago for a dealer in Houston, Tex. He was demonstrating his car to a woman and her husband; the husband was a spectator, as the wife was the one to pass on the car. Before taking the car out, the salesman gauged his gas and found less than a gallon in the reservoir. But, determined to get his prospects in the car, he started for them, intending to pick up the couple, then go to a station and refill his tank.

He got his prospects in the car, but became so busy explaining the good points of the car and beauty of its lines he forgot all about loading up on gas. Away they went toward the country, out Main Street road; he put on more speed to show off "the little beauty."

Then the fatal gasp just before the wake is held over a dead engine.

Difficult to Overcome Bad Impression.

"I forgot to fill the tank," he declared in amazement. "But we will get back all right, so here goes for me calling the service car."

While the busy dealer was at the telephone the wife turned to her husband on the back seat:

"I don't think much of a car that won't go 10 miles. Just as soon as we get back to Houston let's go buy that other machine we saw."

She was determined, but the husband "tipped off" the dealer, and the rest of the day was spent in showing the wife that the car would make all sorts of miles if one only remembers to fill the tank.

"Society" Opening That Was Successful.

The Dominion Motor Car Co., which handles Hudson cars in Victoria, B. C., recently had an opening of its new garage. The premises were magnificently decorated with palms, ferns and cut flowers; an orchestra was stationed on the mezzanine floor. The opening was a big success. It brought out the society people and it stamped the line this concern handles as a fashionable one. Such a plan is not difficult to follow and it brings results. See if you cannot do something that will make people realize that you are there, when your new models arrive. It is your chance to rivet attention. Do not miss it.

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KRIT CAR CHARACTERISTICS PLAIN IN LATEST MODEL

Unit Power Plant with Ball-Bearing Motor Retained with Refined Details—Wheelbase Lengthened and Hood Tapered.

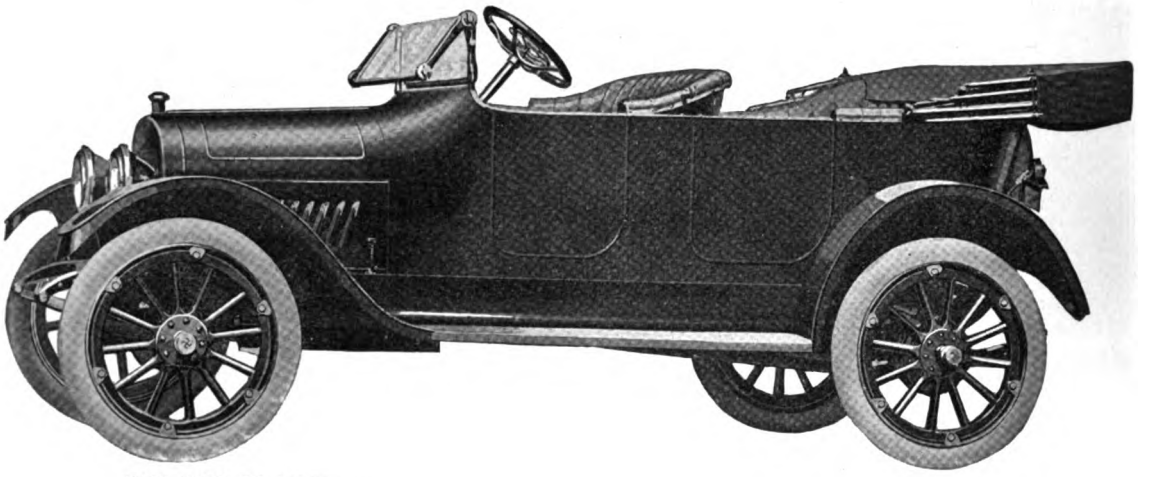
With a tapered hood of the latest style, a longer wheelbase, a smoother running motor and various other detail refinements, the Krit car, produced by the Krit Motor Car Co., of Detroit, has been put forth in its latest form at a slightly increased price that is justified by the improved qualities of the sturdy machine. The general design of the car and the construction of the motor have been altered but little. The motor has not been changed in its essential features in four years, though in the new model the reciprocating parts have been lightened and more accurately balanced with a view to minimizing vibration. The Krit now costs $950, as against the former price of $900. With Disco electric starter the price is $1,050. Electric lights are included in regular equipment.

The wheelbase, having been increased by two inches, now is 108 inches, and though the difference is not very great, it is sufficient to add somewhat not only to the appearance but also to the easy riding of the machine. The fenders have been crowned and given a more flowing curve and, with the tapered, round-topped hood, add not a little to the good looks of the "ensemble." The body is of the five-passenger touring type, leather lined, with cork-linoleum covered floor and running-boards and nickel binding. The gasolene tank is housed under the cowl and behind it is the instrument board of polished wood.

The unit power plant system that has been a Krit feature from the first is retained, the rearward extension of the casing enclosing the multiple disk clutch, which runs in oil, and the three-speed selectively controlled gearset. The cylinders are cast en bloc with integral jackets and heads, and the compactness of the motor is increased in no small degree by the fact that the two-bearing crankshaft is carried on large annular ball bearings. It is stated that the load capacity of each bearing is 3,400 pounds. The connecting rod bearings are, of course, plain, and are of large size, liberal dimensions at these points being permitted by the absence of intermediate main bearings. The flywheel is utilized to pick up oil from the bottom of the casing and force it into a main conduit, whence it is carried to the crankcase and maintained at constant level by means of stand pipes. The pistons and connecting rods are lubricated by splash.

The lubricating oil reservoir has a capacity of one gallon. The engine is rated at 25 horsepower, and its makers are particularly proud of its smooth running qualities and its ability to stand up under the wear and tear of hard service. Current for ignition is generated by a Bosch magneto and a Stromberg carburetter attends to the needs of the motor in the way of gas.

The Krit car is sold with full equipment, which includes the electric lights already referred to, an electric horn, demountable rims, built-in windshield, top and side curtains, and the customary outfit of tools and tire necessities.



SIDE VIEW OF LATEST KRIT TOURING CAR WHICH LISTS AT $950, SHOWING TAPERED HOOD

Used Car Men and Financiers Fall Out.

Although somewhat involved, the financial relations of the Buyers-Sellers Automobile Co. and the Miller-Brisben Co., Inc., the former a financing and the latter a used car concern, were straightened out in the New York City Court last week when a verdict of $552.59 was given the Buyers-Sellers against Miller-Brisben. It grew out of a financed sale of a used car.

According to the alleged agreement, Miller-Brisben sold used cars and the Buyers-Sellers financed the buyer in case he had not the ready money; for this they got a bonus of 10 per cent. on the sale and 6 per cent. interest from the buyer on the amount loaned him. One of these deals involved several notes, one of which Miller-Brisben claimed was to have been extended when it fell due.

Extension, however, was refused and relations were severed which, Miller-Brisben claimed, made it impossible for it to do further business and thus made it impossible for it to meet the note. However, the court ruled that the alleged verbal agreement as to the extension did not affect the note, which was for $500, and judgment was given.

Cash Register Men Take up Three-Wheeler.

The Wagenthals Motor Co., of Detroit, with an authorized capital of $500,000, which succeeded the Wagenthals Motor Car Co., has completed its organization by the election of William O. Pflum president and treasurer and Howard C. Turner secretary and sales manager, both of whom have for some months been engaged in putting the enterprise on its feet. Pflum succeeded Hugh Chalmers as general manager of the National Cash Register Co., from which he retired about a year since, and Turner was formerly sales manager of the Elmore Mfg. Co., and also at one time identified with the Cash Register establishment. The new company will continue the manufacture of the Wagenthals three-wheeled delivery car.

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"GRAFTERS" WHO DON'T REALIZE THEY "GRAFT"

Buyers Who Hint at Entertainment for Themselves a Thorn in a Tire Man's Side—Reilly Explains How Others Than Buyers Exact Tribute in a Petty Way—Favors to Those Who Fawn on Authority.

"Reilly, you hairless dog! When are you going to stock our tires?"

"As soon as my present stock runs out, you rubber peddler! Why?"



JERRY SULLIVAN, CHAMPION OF EVERWEAR TIRES, GENTLY TOOK REILLY'S ELBOW

"Oh, nothing; except that I've been trying to sell you Everwear tires for three years and I haven't sold you one yet. But seeing that you have decided to recognize a real tire, I'll buy a drink, or a smoke, or a sandwich, or anything else."

And Jerry Sullivan, long-time champion of Everwear tires and old acquaintance of the dealer, picked up his grip from where he had dropped it on the sidewalk, gently took Reilly's elbow and steered the little dealer to The Mathcroft and in through a door where women never entered—except tambourine-bearing Salvation Army lasses.

Most Satisfactory Expense Money.

"Now, Reilly, what is it?" he said, as he propped his grip up on the little brass rail which in these later days is supposed to be a foot rest but which originally was intended to prevent the too jubilant from falling into the cuspidors.

When Reilly had indicated a preference—something every man is supposed to have even if he doesn't brag about it—Sullivan said, "Do you know why I'm anxious to buy this drink, Reilly?"

"Company pays for it, probably."

"Maybe that has something to do with it, but. do you know, it's the first time I ever bought you anything in all the years I've been waving Everwear tires in front of your face."

"I hadn't thought of that; is that so?"

"It certainly is," replied the tire vender, "and it's the most satisfactory expense money I ever spent."



"IT'S THE FIRST TIME I EVER BOUGHT YOU ANYTHING," EXPLAINED THE TIRE MAN

"In what way? What do you mean? Don't they mix good drinks in your town?"

"Kidding again, aren't you? I know you can't help that; but, just the same. buyers like you aren't the most numerous thing extant. I've spent hundreds of dollars since I've been selling tires and a lot of it might just as well not have been spent. There's more 'graft' paid out in the selling business than there is in any police department in the world and it isn't nearly as productive of results."

Buyers and Customers Who "Graft."

"Why do you call it 'graft'?" inquired Reilly, who now insisted on retaliating by depleting the cigar stock in the hotel lobby.

"It's nothing but 'graft' pure and simple," asserted Sullivan, after the two had taken possession of well-worn and shiny leather chairs. "After you've been through all the ramifications of the business as I have it sort of galls you to be obliged to spend money on buyers and customers who have become possessed of an idea that they are entitled to have about so much spent on them just because they happen to be in a position to spend a little money for goods now and then. They may not come out flat-footed and demand it, but they expect it, and many of them are quick to show their displeasure if they don't get it.

"With you it's been different, and that, I believe, is one of the reasons why I have found it a pleasure to become acquainted with you and have come to regard you as one of the best friends on my beat. I can talk to you as freely and as openly as to

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anyone I know, and it's only because you're so fair and honest-minded——"

"If you don't quit spreading that stuff I'll can the order," broke in Reilly.

"That's all right; I knew all the time I have been making regular calls on you that you were tied up with other brands and that sometime you would want to change and might give Everwears a show. If you had been like a lot of these 'grafters' it would have taken all the trade we will get from you for several months to make up what I might have had to spend just for the privilege of dropping in to see you."

Buyer Who Gets "All That's Coming."

"Are there many out-and-out 'grafters' like that?"

"Are there! Say! I never went to school enough to be able to count that far, but—— Oh, hello!" added Sullivan in an undertone, when a natty looking young woman in a correct-to-the-letter riding habit flashed across the lobby.

"Never mind, never mind!" advised Reilly; "that's the landlord's wife. She isn't interested in tires."

"There's a buyer for an automobile manufacturing company down in Upperview who is about the worst I ever ran across," resumed Sullivan after his descent to things mundane. "He certainly gets all that's coming to him."

"Does he buy anything?"

"Yes, now and then. The company buys a few of several different brands of tires. They use one brand as regular equipment but have to carry a little of everything to satisfy their customers who have preferences. If you go to see this fellow he always manages to work into the conversation about how the salesman from such-and-such a house was along a few days ago and they had dinner at the hotel or went to the theater or something like that.

Subtle Way of Suggesting Entertainment.

"What can you do? There he is throwing into your face a suggestion that you loosen up and do as well as the last man did, and if you don't he will get a grouch on when he sees you coming, tighten up on his orders and not buy a single tire more than he is compelled to."

"Some system, eh?" commented Reilly, as he slowly and deliberately pushed the ashes from his cigar with his little finger.

"System is no name for it; if he had gotten into public office he would have been a millionaire by this time. I think he made a mistake when he picked out his vocation. And there are many more just like him—supplymen, garagemen, automobile dealers—and I suppose they exist in all businesses where goods are bought and sold. These avaricious parasites just 'graft, graft, graft' like a bunch of Oriental customs officers."

"Yes," supplemented the automobile dealer, "and you don't have to look to buyers to find that sort of thing, call it 'graft' if you will; you can find such attitudes, dispositions, conduct or whatever it is in men, positions and lines of trade too numerous to mention."

"Just how?"

"Just as you described," replied Reilly. "By hinting for favors and fishing around for anything they can get for nothing. It seems to grow in some people in proportion as they rise in positions where they are in a shape to hand out anything. They used to have an advertising manager up at the



"IT'S NOTHING BUT GRAFT, PURE AND SIMPLE," ASSERTED SULLIVAN

factory who was the limit that way. He could dig up more free dinners than any other three men in the whole shop. It got so they used to call him Hallroom—when he wasn't around."

"Hallroom boy; that's good!" laughed Sullivan.

"Yes, they used to say he was trying to cut down on his board bill. The company's advertising appropriation for a year would be all made and the whole campaign laid out, but still he would continue to string the magazine men along. They would call to see him and ask how chances were for their publications. If they could have seen the year's layout they wouldn't have showed up for months, but this lad used to lead them on, talk wise and hint at plans which were maturing and the poor magazine boys would scratch his back, take him out to dinner and spend their good expense money.

"This same lad is a good illustration of what possibly is a form of 'grafter' somewhat removed from the particular breed you first mentioned, but in principle it's the same thing. He would favor any of his stenographers or subordinates who would fawn upon him and do favors for him. There was one stenographer who used to mend his gloves and she was always ready to do any such jobs for him. In exchange he used to give her the easy part of the work and the real work in the department was done by girls who had more backbone and who were about a hundred per cent. more efficient.

"But the efficiency of the others didn't mean anything to him—except that he knew where to go when there was any real work to be done. He was out to get all the favors he could and get as much as he could out of his job by using the authority that went with his position."

Reilly's Self Respect Stands in Way.

"He should have been an apartment house janitor," laughed Sullivan. "That would furnish him a still more extended field for his efforts."

"That's one reason, Sullivan, that I never like to accept favors from men who are trying to sell me something. My self respect never would let me do it. When a salesman comes around and mixes his selling talk with an invitation to dinner I do my best to dodge it, for after I have eaten at a man's expense it makes me feel under obligations.

"The buyer you mentioned evidently bases his orders so far as possible on the amount of money the salesman spends on him, but I think you'll find that in the majority of cases goods to-day are bought on merit and not on their eatable accessories. At least, that's the way the situation appeals to me; I buy my stuff that way."

"I think there's only one time when buying a feed does any good," replied Sullivan with seriousness.

"And that——" Reilly left the sentence unfinished.

When There Is Real Excuse for "Buying."

"——is when it is done because there seems no other time to get a chance to talk with the man you want to see," concluded the tire man. "Many men—not necessarily men in buyers' positions—are very busy and you may not be able to get to them at their offices. They may be stocking some other line and may not be able to see that it's policy even to consider your goods. Such a man often is not averse to going out to lunch with you if you approach him in the right way"—the two walked toward the street—"that's different from just entertaining to get a man's good-will."

"Why don't you show her how much more fun she could have with a car?" suggested the tire man, as the proprietor's wife disappeared down a side street which was brown with autumn leaves.

"She's stuck on that horse."

"Take it in trade."

"I might," and Reilly hesitated, "but I don't know just how to go about it to overhaul a used horse."

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GIVING NEW FINISH TO CARS THAT ARE WORSE FOR WEAR

Simple Painting Operations Made Easily Understandable by an Expert—What to Do and How to Go About It.

Beauty may be only skin deep, but there may be quite a lot of beauty in a skin of paint. It goes without saying that there are few things that depreciate the value of a car to a greater extent than does the condition of the paintwork. In the marketing of used cars in particular, appearance is, almost literally, the whole thing, as nearly every one who has attempted to dispose of cars taken in trade knows. To finish a car from the rough, just as it comes from the shop, is not an easy job, and though it should not be attempted—probably never will have to be attempted—by the average garage or repair-man or dealer, refinishing a car that has been in use for a year or so and shows signs of some of the knocks it has received is not as difficult as might be supposed. It is a job, in fact, that may be tackled by almost any one who has the necessary room for the work. According to an expert who has made plain the method in the Carriage Monthly, the work amounts to little more than a coat or two of color and a coat of varnish.

The first step, of course, is to touch up any bare or fractured spots, and for this purpose a little red lead "saddened down" with a good, strong lampblack and limbered up with some raw linseed oil is the proper thing. After the fractured spots have been scraped and sandpapered out and the debris brushed away, the lead and lampblack should be applied with a small, well-pointed soft-bristle brush. The whole of the car should be gone over in this way, getting all the bare spots under a coat of "touch-up" color. The chassis should be served in the same way, grease and road dire accumulations first having been removed, using a softening material composed of one part crude oil and three parts turpentine for the purpose. Apply this material with a swab of soft cloth and let it stand long enough—several hours, or all day, if necessary—for the accumulations to soften, when they may be removed with old burlap or some other coarse fabric. The same oil-turpentine mixture should be applied to the body wherever oil or grease spots appear.

There are two ways open to the painter for preparing the body surface for color. One way, and the very best way, is to rub down with water and pulverized pumice stone. This takes everything off the surface that doesn't belong there, and, incidentally, fits it to receive the color. The second and cheaper method consists in sandpapering the surface down with No. 0 or No. ½ paper, the coarseness of the paper determining the choice. Before following either of these ways out, however, all surface defects are to be puttied with hard drying putty, and allowed 24 hours in which to dry. Face these putty spots down with rubbing brick dipped in pure turpentine in the event of sandpapering the body, and with rubbing stone dipped in water in case the surface is rubbed with water and pumice stone flour.

Possibly the old paint on certain parts of the car body, notably those parts subject to acute vibration or violent strains, show a series of force checks which, while not deep, are sufficiently so to get in the way, like a sore thumb, under the one coat of varnish practice. To put these well out of sight, temporarily, at least, break up some hard putty in turpentine to a consistency to work freely from a 2½-inch half elastic scraping knife, and face up the parts referred to. In surfacing down this putty glaze dip a block of rubbing stone, cut to a convenient size, in turpentine. Avoid using water for such work on account of the moisture likely to find its way into the crevices. This moisture during the process of evaporating serves to break the fissures into wider and deeper checks, making their last state worse than the first.

Having thus finished stopping up the fractures and fissures, and making the surface like new, with the necessary smoothness provided for, the next step is the application of the color. In this matter avoid, if possible, the use of black or extremely dark colors, such as the very dark blues or greens. These colors naturaly exaggerate surface inequalities, and for finest display require specially thorough surfacing work. Medium deep greens and blues, and light blues, with any of the beautiful browns, along with deep, rich reds, including a number of the lead lakes, are colors particularly adapted for color, and one coat varnish work.

Scarcely any of these colors, however, will furnish the requisite color density and intensity on one coat. Therefore, apply one coat of flat color and follow with one coat of varnish color, or one coat of glazing color, as it is termed, when using such semi-transparent pigments as ultramarine blue, carmine, and any one of the lakes.

In making up a varnish color, or glaze color, for one coat work, use, as a rule, two ounces of color to one pound of varnish, first thinning the color with turpentine to a cream-like consistency, and then gradually stirring in the varnish. Apply the varnish color, or the glaze color, freely to the surface, using for this work a flat, chisel pointed, badger hair brush, one small brush for wiping up and running edges and one 2- or 2½-inch width brush. As this is to be a one-coat job extra care must be taken to have a solid, uniform coat in place.

The day following the application of the varnish color or glaze coat, go over the surface with a 1¼-inch thick block of felt, saturated with water, and dipped lightly in No. 00 pulverized pumice stone. Finish off with a light water rub, and confine the rubbing process to simply "killing" the luster, and cleaning off minor surface blemishes. Run on the striping lines, if any, and then in due time apply a heavy coat of the best finishing varnish obtainable for use directly upon the flat color or the varnish color coat.

In the meantime, bring the chassis along in practically the same way, putting on in varnishing all the material the surface will carry, this being the saving factor in the matter of appearance, in all one coat varnish work. Lick over the fenders, and guards, and radiator, with something to match them up with the car in general. Brighten up the brasswork, if any, and when the car is assembled give it a close inspection, and the proper touching up to insure a well-balanced finish throughout. While a job of this kind is a comparatively cheap one, and offers no extravagant profits, it is worth while doing well up to the limit of the price received.

To Make Castings in Indianapolis.

For the purpose of producing steel castings by an electrical process, particularly for the automobile trade, the Electrical Steel Co. of Indiana has been incorporated, under the laws of that State, with an authorized capital of $100,000. It will locate in Indianapolis, where it will operate under patents controlled by H. H. Buckman, who will be the company's chief engineer. In addition to Buckman, the directorate is made up of well-known Indianapolis business men, among whom is George E. Wiedely, vice-president of the Premier Motor Mfg. Co. The others are Hugh McK. Landon, formerly vice-president of the Indianapolis Water Co.; M. Forrest, secretary of the Citizens' Gas Co., and Chester P. Wilson, president of the Interstate Public Service Co.

Philadelphia to Build Municipal Garage.

Philadelphia shortly will become possessed of a municipal garage and repair-shop. The necessary contracts have been placed by the Department of Public Safety for the erection of such an establishment at 11th and Reid streets. It will be a three-story brick and terra cotta structure, 115 x 258 feet.

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RECENT DEVELOPMENTS in ACCESSORIES

Pick-up Pliers that Relieve Perplexity.

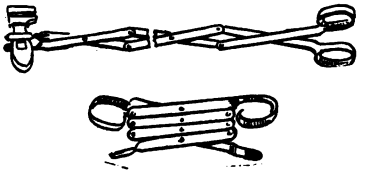
They used to call them "lazy-tongs," because you could get hold of a thing quite a distance away; and they were handy, for instance, for picking things out of a hot fire. The Bremer-Wilson Mfg. Co., of 1421 Michigan avenue, Chicago, has seized upon the idea with a timeliness that is as good for all practical purposes as originality, and produced the pick-up pliers shown in the accompanying illustration. And anyone who has ever dropped a nut or a bolt or a wrench into a crankcase or a cylinder or any other place where the job of getting it out entailed a fishing expedition with a piece of wire will appreciate the positive luxury of being able to reach 21 inches with a slender tool and neatly nip the article and bring it into the light of day. Not only can the pick-up pliers be used for rescuing lost articles, but by nipping a piece of waste or a rag soused in gasolene many interior parts of a motor can be cleaned that would be difficult and perhaps impossible to reach in any other simple way. The operation of the tool is as simple as the manipulation of a pair of scissors. It is made of good material, nickel plated and is 7 inches long when folded—small enough to go into a pocket. The price is $1.

Develops Quick-Acting Valve Cap.

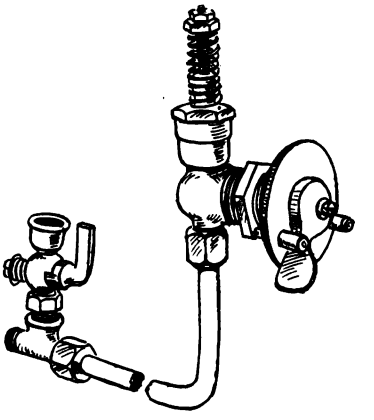
By way of facilitating the removal and replacement of tire valve dust caps, after the inflation of tires, the Burke Valve Co. of Cleveland, Ohio, has placed on the market a new type of cap which is quite different from anything else of its kind; it is shown herewith, and consists of two parts. The cap proper, instead of being threaded to fit the thread on the body of the valve, screws into threads in the nut that holds the valve in place. Hence, it can be taken off or put on in a fraction of the time required for the ordinary cap, for it is not necessary to screw it nearly the length of the valve before it brings up against its seat on the nut. The nut, by the way, can be substituted for the ordinary valve nut in about two shakes. Furthermore, the cap is made hexagonal instead of round, so that a wrench can be applied to it if necessary to ensure that it is perfectly tight.

Simplicity in Gasolene Savers.

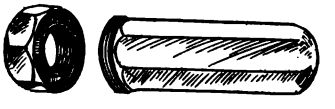
Gasolene savers of the auxiliary air inlet type have increased and multiplied until their name now has become comparatively common; but there are few that have the simplicity and the ease of attachment of one of the most recently devised instruments of its class—the Crary auto-valve gasolene saver, manufactured by the Crary Co., of 650 Woodward avenue, Detroit. A small, neatly designed spring-controlled automatic air valve is mounted on the motor side of the dashboard, with a regulating thumb-lever on the driver's side. From the valve a copper pipe leads directly to the intake manifold, just above the carburetter, where it is tapped into a hole drilled for the purpose. That is all there is to the saver, except a priming cup attached to the fitting that screws into the manifold. The advantages of dashboard air regulation are too well known to need recapitulation; suffice it to say that the Crary device provides not only a simple air adjustment, but also an efficient priming device that is especially useful in the case of a motor that is not fitted with priming cocks on the cylinders. The saver costs $5.



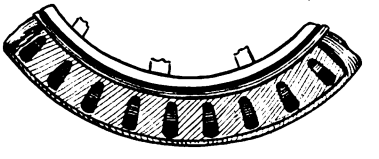
B-W "PICK-UP" PLIERS



CRARY "GAS" SAVER



BURKE VALVE CAP



"NO-AIR" CELLULAR CORE

Cellular Core for Pneumatic Tires.

Making the somewhat unusual claim that it has produced a core for pneumatic tires that will give greater resiliency than pneumatic tubes inflated to the proper pressure, the Akron Airless Tire Co., of Akron, Ohio, has placed on the market a rubber core that is made in sizes to fit any pneumatic tire. The accompanying illustration shows the core, in section, in place in a casing.

The "No-Air" core, as the device is styled, is made with a large number of air cells which allow the soft rubber ample room for displacement under pressure. It is stated that the life of a casing is greatly prolonged by the use of this core, and, of course, there is no danger of trouble from punctures, blow-outs or other ills that the air-filled tire is heir to. The "No-Air" cores are made not only in various sizes, but of various degrees of resiliency, so that they can be used for pleasure cars of various weights and also for commercial vehicles.

To Make Good Soldered Repairs.

In making soldered repairs it is well to remember that the hotter the soldering iron up to certain limits where it will hold no solder at all, the smaller will be the amount of solder deposited on the work. Similarly, if the iron is not quite hot enough the job will be a "lumpy" one, as tinsmiths say. There is a temperature that is just right and it is worth the practice necessary to obtain it, for it ensures good workmanship.

Mixture that May Make Hard Starting.

All statements to the contrary notwithstanding, a very rich mixture will not permit a motor to start any more easily than will one that is just right; on the contrary, it may make starting more difficult. A mixture that is just a little richer than ordinarily is used will facilitate starting, but care must be taken not to "put the Miller's eye out," as the saying goes.

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SELLING CARS IN THE FRENCH WAY IN AMERICA

Importer Who Follows the Principles Prevalent in His Native Land and Who Doesn't Follow-up—Says Fancy Dictates Choice in Top-Priced Cars—Discusses European and American Salesmen.

Selling is selling. It's the same the world over.

Many people say so and a lot of them believe it—but it isn't true.

"If an American salesman, with his American methods and his American follow-up system, tried to sell a car in France the prospect would button up his coat and trousers pockets and leave his money at home," is the way Emanuel Lascaris, who imports and sells De Dion-Bouton cars at 1672 Broadway, New York City, describes the difference that exists between selling in America and France. "The prospect would think the salesman was trying to put something over on him," he added.

Markets French Car in French Manner.

Lascaris is a Frenchman; also, the car he sells is French and, it may be added, Lascaris sells to a class of trade which is different in its entirety from that encountered by most American dealers. The reason is obvious when it is understood that a high-grade car imported from France costs often twice as much as its American counterpart and, therefore, the buyers are necessarily men of large means.

Lascaris, in marketing his imported product, has chosen to market it in the French way, and so far as his car and his trade are concerned, his methods have made good. He does not believe in following-up a man, nor does he make a half-hearted desistance from urging his prospects to buy; instead, he acts on the theory, which to an American salesman may sound erroneous, that if a man wants a De Dion he will buy it without being urged. Right or wrong, he sells cars—which is quite sufficient, so far as Lascaris is concerned, at least.

This brief description of Lascaris's methods may be taken to indicate that no selling is done at all, but this is an incorrect presumption, for, to use his own words, "The cars sell themselves." It is assumed, and generally correctly, that any man who enters the De Dion salesrooms does so because he wants a De Dion car and would not have come in had he not wanted one. Once he arrives he is shown what the line includes.

If the man then wants one he buys it. If he doesn't want it, Lascaris doesn't want him to have it, and this attitude has resulted in one of the strongest clienteles possessed by any dealer. "Some dealers say that only death can rob them of a customer," said Lascaris, "but not even death takes away a De Dion customer, for even after he is dead his family generally continues to buy De Dions."

Just what lies at the bottom of this selling method is best explained in the words of Lascaris, who says that is the way to sell to the man of business ability and sense. "That is the way cars are sold in France," he explained. "They are sold differently than they are in America because the two peoples are different. France is an older country than the United States and its people, as a whole, have more business sense. A salesman can't chase up a customer in France as the salesmen do in America; if that were attempted the French customer would suspect that the salesman was trying to trim him in some way and he would immediately close up and be a 'dead' prospect.

Comparison of French and Americans.

"It is best made plain by a comparison of the two peoples. In this comparison I am not speaking of that part of the people which buys cars but of the entire population. Take the real estate sales that are made in America; what per cent. of them is made to people who never wanted to buy at all? How many building lots are sold to people who bought because they were 'sold' by a slick salesman? After they have made the first deposit and are attached financially to their 'bargain' they have nothing to do but keep on paying. They have bought something they did not want.

Older Nation Has More Business Sense.

"They do not seem to possess business sense. They do not seem to have any more business sense than is generally accredited to women. The reason probably is that America is a younger country and has not settled down to the plane which has been reached by Europe with its centuries of history. In France they do not buy things that way. If they want them they buy them and if they don't want them they let them alone. I should say that the business sense of the entire French people compared to that of the entire American people bears about the same relation as does the business sense of an American man to that of an American woman.

"You must not misconstrue this. There are women in both countries who have great business ability, and in America there are women who are capable of directing great enterprises, but the people as a whole have not reached the development that exists in France. Nearly anyone will admit that if he wants to float a big scheme or start a 'boom' he can do it in America much better than he can in France.

"And now, to speak of my own business: People do not buy De Dions because they are good cars. I do not mean that the De Dion is not a good car, for it is one of the best in the world, but I do mean that that is not the reason people buy them. It is, however, the reason they continue to buy them,

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but the reason they buy them is because they fancy a French car and one of the De Dion type.

"A man does not buy a De Dion because he wants it to take him somewhere; he buys it because he likes it. If a man wants a car merely to take him somewhere he might just as well buy a Ford for $500; the Ford will take him where he wants to go; it will carry him downtown or anywhere else, but he doesn't fancy a Ford. He fancies a De Dion; therefore he buys a De Dion.

"I do not believe in following-up a prospect. I do not believe there is a better place to sell a man a car than right here in the salesroom, for when a man is here the cars are in front of him, and the car itself is the greatest argument we have. The man can see the whole construction and get an idea of the style of body he can get, and to the people with whom we deal this is much more effective than an endeavor to convince them of something they hesitate to believe.

Salesroom Best Place to Talk Cars.

"A man's home or his office is not a good place to talk car. I don't believe I have been downtown to talk car in four years. If I go to a man's office I am likely to be kept waiting 15 or 20 minutes; that wastes my own time. When I get to him he is likely to be interrupted by telephone calls or urgent business. What I have to say is repeatedly brushed from his mind; finally he asks me to see him some other time. The whole interview is unsatisfactory because the man has not been permitted to pay full attention to my business; but if he comes to the salesroom he can think of nothing but the car and I have the advantage.

"When I see a man somewhere else than in the salesroom he has me at a disadvantage. It is like fighting the enemy in his own territory. But when he is in the salesroom I am fighting on my own ground and all the advantage is with me. Not only am I in my own territory but I have the car right before his eyes.

Never Follows-up Catalog Requests.

"Inquiries? Yes, we get inquiries, but we do not follow them up. We get a great many requests for catalogs and to these people we mail catalogs. Many times a chauffeur comes in and asks for a catalog; we give it to him, but do not attempt to pump him as to who his employer is. We also get requests from children who are collecting catalogs, and even these are never turned down. I should estimate that our written requests for catalogs net about 10 per cent. sales. We get about 1,000 requests a year and sell about 100 cars, and all this without chasing up the inquirers. The class of people which buys De Dions is not desirous of being followed up, and we act accordingly.

"Selling an imported car is different, too, in a way, from selling any American car. It is said that the difference in European and American cars is that the European car is made to fit the buyer, while the buyer is made to fit the American car. Bodies are built for the customers in European sales, while in America the whole car is built and the buyer has to take it the way it is built.

Makes the Car Fit the Man Who Buys.

"We import chassis largely and upon our salesroom floor have bodies which we show more as samples than anything else. We seldom sell a car as it stands on the floor. Sometimes a man will be satisfied with a body as it stands and will want his car immediately, in which case he takes the car as it stands on the floor. But generally he tries the seat, suggests alterations, indicates a preference in upholtsery, picks out a body color, fixes the width of doors and orders the whole thing exactly to suit his taste.

"Imported cars probably have to cater more to the trend of women's fashions than does any other line of cars. You would be surprised to see the difference the change of styles makes in the specifications of the bodies we have built. When women wore those big, wide hats we had to make the limousine doors very wide, else the women could not get in without tipping one ear over on their shoulder. But now that hats have narrowed and have been equipped with those stick-ups and plumes which are very high we have to make the doors and the roofs higher. A woman will sit in the seat of one of our model bodies, feel above her hat to see how much room there is, and order accordingly.

Car Bodies Conform to Fashion's Trend.

"The tight skirts necessitate a different seating arrangement. The women can't slide down into a deep seat any more; they have to have an extra cushion at the back, or something to lessen the depth of the seat. We have provided in several cases a hassock for their feet.

"These minor details constitute much of the selling talk with us. The most we feel compelled to do is to help a man select the size and power of car he wants. Many a man comes in to buy a De Dion but doesn't know just how big a motor he wants. If it is purely town work for which he is to use the car we recommend a smaller motor than he often first thought he wanted. We endeavor to advise a man honestly on these points."

A feature of De Dions which Lascaris believes adds to their marketable value is that while the mechanical part of a car may be changed the exterior is not noticeably altered. This makes it difficult to tell from the looks of a car just what its vintage is. The fact that a man has bought a 1913 car does not cause him dissatisfaction when a change is made in the 1914 cars, for the exteriors remain the same and it is not possible for a 1914 owner to point out the other buyer as they pass on Fifth avenue and say, "There goes ——— in his last year's De Dion." Lascaris is able to tell the difference, because he is a specialist in the line of cars he handles, but the ordinary motorist sees no difference in different series of De Dions; also, seldom are any two bodies alike.

Well Kept-up Car May Last Ten Years.

This method of manufacture enables an owner to retain his car in service as long as it lasts, and Lascaris is sponsor for the statement that ten years is not impossible for a well-kept-up car of his line. In the matter of service he is not over generous, as measured by some American standards, for, he says, "it is a purely business transaction and our owners do not expect unreasonable things. We live up to our guarantee to the letter, but we do not do a lot of little things that should be attended to by the chauffeur."

This selling of French cars in a French way may not appeal to the average American salesman, but Lascaris couldn't be induced to alter his methods. His statement that he sells about 100 cars a year does not sound like an extraordinarily voluminous business but when it is considered that De Dions sell from about $6,000 up to $10,000 and $12,000, with an average of $7,000 or $8,000 per car, the total becomes far from insignificant. It represents nearly $1,000,000, which volume of business is not exceeded by some manufacturers.

Red Cans for Gasolene in Joliet.

Dealers, garagemen and other tradesmen in Joliet, Ill., are quite likely to pay more heed hereafter to the color of the can in which they keep gasolene and oils, for because four of them failed to have gasolene in red cans they were haled into court last week by fire inspectors and fined $10 and costs each for violating section 1 of the criminal code. The offenders were the E. H. Lennon Garage Co., Van Buren and Scott streets, the Hargreaves Garage, 110 North Joliet street, The Texas Co., Lockport, and the Standard Oil Co., East Cass street, which indicates that the "big ones" are just as liable as the "little ones."

Ajax-Grieb Opens Indianapolis Branch.

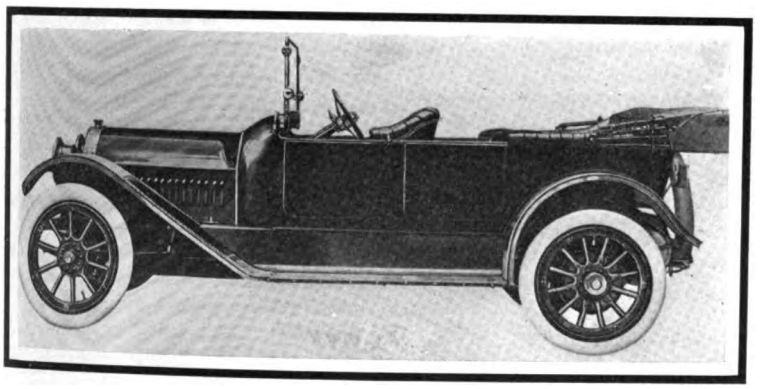
The Ajax-Grieb Rubber Co. has established a branch in Indianapolis. It is in charge of Geo. J. Van Vern.

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MORE THAN NEW GEARSHIFT IN LATEST HAYNES CARS

But Improvements Are Chiefly in Details—Electric Gearshift Standard Equipment, But Optional—Biggest "Four" Dropped.

The dominance of the six-cylinder motor and the adoption of the electric gearshift are the upstanding features of the revised line of cars offered by the Haynes Automobile Co., of Kokomo, Ind. As was stated in Motor World at the time of its adoption, the Vulcan electric gearshift has been included as standard equipment on all three models—one "four" and two six-cylinder machines. The former four-cylinder 40-horsepower car that was styled model 22 has been dropped, while the other "four" has had its designation changed from model 24 to model 28; the "six," formerly model 23, has become model 26 and the added "six" is model 27.



SIDE VIEW OF NEWEST SEVEN-PASSENGER HAYNES "SIX"

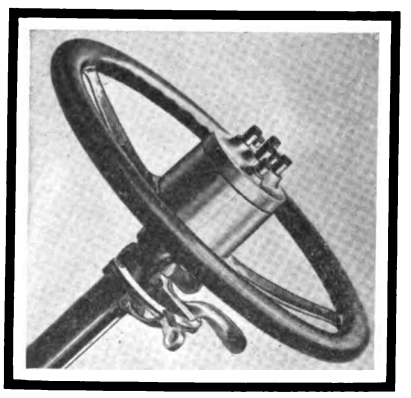


REAR VIEW OF LIMOUSINE

It goes without saying that the changes of designation are accompanied by such detail improvements as might be expected from manufacturers who have been in the field as long as the Haynes people—that is to say, from the very beginning of the industry—but there is a lack of radical changes that bespeaks sataisfaction with the way the machines have stood the test of service. The installation of the electric gearshift and other improvements have justified an increase of price of $200 on the "four" and the "six" that has been carried over. The long wheelbase "six" sells for $85 more than its shorter prototype. On special order the electric gearshift will be omitted, the price being reduced where hand operation is desired.

Apart from the incorporation of the Vulcan electric gearshift—which device ,incidentally, was given a thoroughly convincing demonstration in a 700-mile tour from Kokomo to Sioux City, Iowa, in a model 26 "six"—the changes that have been made are anything but radical. The gasolene tank has been suspended at the rear of the frame, which of course calls for force feed to the carburetter, an air gauge on the cowl board indicating the pressure at all times. Air is supplied by a power pump driven from the camshaft, and there is the usual auxiliary hand pump on the instrument board. The spaces under the seats are available for stowage of tools, battery box and so on; the battery box is placed under the front seat, leaving the running boards clean and clear. Leather kick pads have been placed for the protection of the finish of the interior. With a few such alterations, the Haynes cars remain as they were.

The Vulcan gearshift has been described in detail in Motor World; suffice it to say here that the usual side lever is replaced by a dial of push-buttons mounted on the steering wheel, though it is allowed to lurk in the tool box for emergency use. The operation of changing from one gear to another consists in pressing one of the buttons and depressing and releasing the clutch pedal. As the throwing out of the clutch is essential to the operation of the solenoids or hollow magnets that do the actual gear-shifting, it is clear that there is no possibility of stripping gears by trying to change from one speed to another without throwing out the clutch.



HAYNES GEAR SHIFT CONTROL

The same motor is installed in both the six-cylinder models. The bore and stroke arae 4¼ x 5½ inches, respectively; the compression is 59 pounds. The bore and stroke of the "four" are the same as in the "six" and the formula horsepowers are 28.9 and 43.35, respectively, though the dynamometer says that the "four" will work up to 48 horsepower and the "six" to 65 horsepower. The similarity of the motors does not end with the bore and stroke measurements. All the cylinders are cast in pairs and are of the L-head type. The crankshafts are of chrome nickel steel, 2 inches in diameter, and are offset from the cylinders. In the four-cylinder motor the total bearing length is 11 15/16 inches, and in the "six" 16⅛ inches. Pistons are 5⅛ inches long; connecting rods are 11 inches from center to center and the piston pin is clamped in the upper end, working in bushings in the piston. In the smaller motor the camshaft has three bearings and four in the larger. Cams are integrally formed with the shaft, and there is an eccentric which operates the combined air and oil pump, for putting pressure on the gasolene and inflating tires, and for circulating the lubricating oil.

The lubricating system combines splash and constant circulation, the pump taking oil from the engine base and passing it through a sight feed on the cowl board, whence it goes to conduits leading to the main bearings and to the splash troughs under the connecting rods. The main bearings, the idler gear and the troughs are fed directly and the cylinders are oiled by splash. The oil from the main bearings and from the idler overflows finally into the base, that from the idler first, however, lubricating the timing gears. An efficient strainer is of course part of the system.

Ignition is by American Simms magneto. The jacket water is cooled by being pumped through a Fedders cellular radiator, back of which is a pressed steel fan. On the four-cylinder car the radiator is 3 inches

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deep, and on the six-cylinder models 3⅞ inches.

The gearset, equipped with the electrical control, provides for three forward speeds and, of course, the control is selective. The gearshafts are short and heavy, of chrome-nickel steel, and run in Timken roller bearings. The rear axle in the "four" is a McCue of the full floating type and is equipped with heavy ball bearings, while on the "sixes" Timken roller bearing rear axles are fitted. All frames are of hot-rolled cold-pressed steel having a thickness of 3/16 inch. Spring bolts are of nickel steel, hardened and ground, with grease-cups formed integral, and all spring-eyes are bushed with hardened steel and are accurately fitted to the bolts.

As has been the case for the past two seasons, the Haynes cars are regularly equipped with electric lighting and starting; the Leece Neville system is installed. In this system there are two separate units, a generator for producing the current for lighting and battery charging and a motor for starting the engine. With the electric gearshifting device and the electric lighting and starting system, the car may be said to be thoroughly electrified.

Model 26, which is a "six" and differs from the other "six" in having a wheelbase 6 inches shorter, or 130 inches, is fitted with two-passenger roadster, or four- or five-passenger straight line touring bodies for $2,700. With a special coupe body the price is $3,200. The other "six," model 26, with 136-inch wheelbase, mounts either six- or seven-passenger touring bodies for $2,785 or a limousine body for $3,850. Model 28, the "four," is listed at $1,985 with two-passenger roadster or four- or five-passenger touring body, and $2,700 with coupe body. The wheelbase of the "four" is 118 inches. Standard finish includes a dark blue body with black running gear and wheels, with an option of gray body with black running gear and wheels.

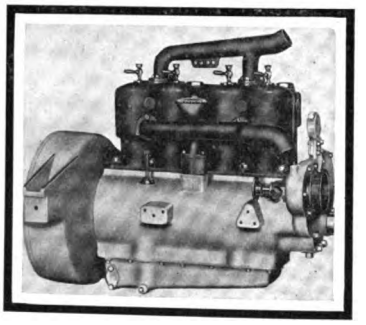
When Magneto May Cause Overheating.

Improper handling of the ignition lever is not always the cause of overheating in a motor with a well-adjusted carburetter. It is entirely possible for the magneto coupling, in some cases, to become loose and permit the ignition to lag, despite the advancing of the lever, and the same thing can result from loose connections between the lever and the timer. On the other hand, loose connections of the latter variety can cause pounding due to too much advance, for the point of ignition may remain too far advanced despite the retardation of the lever when the motor slows down. These troubles may not occur often, but they are among the possibilities and should be looked for in puzzling cases.

TWO SMALLER MODELS ADDED TO LINE OF ERGON MOTORS

Standardization Feature of Both which Retain Hazard Characteristics—Pump or Thermo Cooling and Three-Point Suspension.

Having turned the proverbial order of things upside down at the beginning of the current year and started the Ergon line of motors with big beginnings—that is to say, an engine with a bore and stroke of 4⅜ x 6 inches, respectively—the Hazard Motor Mfg. Co., of Rochester, N. Y., now has produced two motors of smaller size and power than the original. While many of the features of the first motor have been retained, including the name, which is from the Greek and means strength or work, certain



ERGON STANDARD MOTOR

changes have been made, some of which are due to the smaller dimensions of the machines and others to the march of progress in motor building.

The two new motors, which are known as models C and CX, have measurements of 3¾ x 4½ and 4 x 4½ inches bore and stroke, respectively, and are rated at 20-25 and 25-30 horsepower. Similar lines are followed in both cases. Both are four-cylinder motors; the cylinders are cast in pairs and are of the L-head type and are cast with generous water spaces in the jackets to insure adequate cooling. Incidentally, the motors are fitted either for pump or for thermo-syphon cooling, the pipes for the pumpless system, of course, being considerably larger than in the pump system. The valve stems are enclosed; valve camshafts are driven by helical gears of steel and cast iron, as are also the pump and magneto, which marks a change in construction, the first Ergon having Renold "silent" chain drive.

The crankcases are of the barrel type—that is, they are not split on the center line—and the flywheel housing is cast integral with the crankcase. To the bottom of the crankcase, which is but 4½ inches below the center line of the crankshaft, is bolted the oil reservoir of cast iron, which material adds in no small measure to the stiffness of the unit. Lubrication is by splash, with pump circulation of the oil. Three crankshaft bearings are employed. Cylinders, pistons and crankshafts are accurately finished by the accepted modern method—grinding. Crankshafts and connecting rods are of high carbon steel. As an aid to smooth running, all the reciprocating parts are carefully balanced and are given a running balance test in machines devised for the purpose.

Both magneto and water pump—when a pump is fitted—are on the same side, the right, and the intake and exhaust manifolds and the carburetter are on the opposite side. Magneto and pump are driven by what is practically one countershaft, the magneto being nearest the gear, so that the omission of the pump is a simple matter and does not cause any extra trouble or spoil the appearance of the machine when thermo-syphon circulation is used.

Three-point suspension is provided for, there being two arms cast at the rear end on the flywheel housing, while the third point is a trunnion through the center of which passes the starting crank shaft. The trunnion is an integral part of the aluminum housing that covers the timing gears. Going to the opposite end of the motor, the flywheel is supplied in various forms, suitable for different types of disk and cone clutches. The Hazard company some time ago discontinued the manufacture of change-speed gears; but it is stated that any of the standard gearcases can be attached to the Ergon motors. In all cases standards have been incorporated when there were any standards, the company's practice in this respect being, therefore, abreast of the progress that has been made.

Castor Oil as a Belt Dressing.

As nearly every one who has had experience with one will testify, slipping fan belts are an abomination, though they are very easily cured of their slipping propensities if the proper material is applied. Powdered resin will stop the slip temporarily, but its action on the leather is bad, according to leather experts. By far the best thing to use is the common or home variety of castor oil lightly applied in very small quantities. The oil will soften the leather and permit it to get a grip on the pulleys. Needless to point out, the tension on the belt must be adjusted properly.

When "Strong" Butter May Prove Useful.

While "strength" in butter is not usually considered a virtue, it is a good thing in butter when that substance is used to remove spots from varnish, for which purpose it is said to be really useful.

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CHAMPIONS LOCAL SHOWS AS STIMULANT TO TRADE

Secretary of Omaha Dealers' Association Rates Them Above State Fair Exhibits—Says the Latter Are "Time Wasted."

Editor Motor World:

I have read with a great deal of interest the article "Logical Substitute for Local Shows" in your October 2nd issue. I do not know, of course, as to where you obtained the information on which this article is based, but I believe that I am fairly well posted on this question and I wish to take issue with the statements made in your article.

I am willing to admit, for the sake of argument, that the local show may not be ideal—nor the National show, for that matter—but I do not feel, however, granting this to be true, that the State or county fair is an acceptable substitute. I disagree with the statement "If the truth were known it probably would be found that more genuine prospects are obtainable at a county fair than at any local show that ever was or may be held." If you will write to any dealer or distributer in Omaha who made an exhibit at our recent State fair, or, as a matter of fact, will investigate the situation in any State where a county or State fair is held, I believe you will find that the verdict of these dealers and distributers almost without exception will be that such displays represented time wasted.

I am not in a position to judge or criticise the local shows held elsewhere, but as conducted here in Omaha under the direct management of the dealers who exhibit, I feel that the local show is a decided success. Last year our show brought in over 1,000 dealers and each one of these dealers brought from one to 20 prospective customers. Not only were many contracts made, appointing agencies for 1913, but actual sales were effected and cars delivered at the time of the show. The show was conducted as economically as possible, and, after all expenses had been paid, there remained a good-sized sum in the treasury and a very substantial rebate was made to the members of the Show Association who had exhibited. We have had this same experience each of the eight years we have held the show, and the best indication that the dealers of Omaha feel that the local show is a benefit and a stimulant to trade is the fact that each year at the meeting when the report for the show is turned in, plans are made to hold a show the next succeeding year.

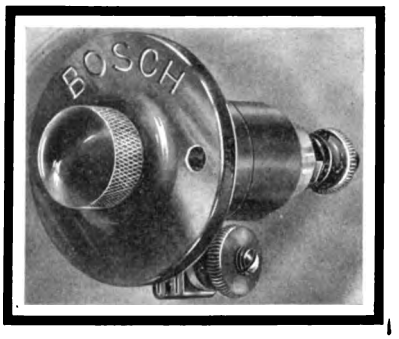
The local show does not necessarily mean "clothes" or "society," as you express it. Our show here in Omaha is designed to exhibit cars that can be used in our territory; we cater to the trade all through Nebraska, Iowa, Missouri, Kansas and South Dakota and the people who come in here for our show are here for business, pure and simple, and not for "clothes or society."

If the local shows with which the writer of Motor World's article has been familiar have been failures, it seems to me that it would be only right to first examine the management or policies of other shows before condemning the local show as an institutiton.

CLARK G. POWELL, Sec'y,
Omaha Automobile Show Association.

New Ignition Switch Added by Bosch.

To take the place of older spring plunger and key switches, the Bosch Magneto Co.



BOSCH PRESS BUTTON SWITCH

just has brought out a new type of magneto short-circuiting switch which has a number of advantageous features. Its purpose is to permit the driver of a car to short circuit the primary circuit in his magneto either temporarily, as when coasting down hill when the engine is used as a brake, or permanently, as when the car is left unattended. For either purpose the switch can be placed on the dashboard or the toeboard and operated as a pedal. The connections of the device are more than ordinarily simple: To the terminal at the rear, a wire leads to the primary or grounding connection of the magneto; a second wire, which is attached to the terminal of the collar clamp, leads to some part of the engine where a ground can be obtained. When the button or key is inserted and turned either right or left until it snaps into position, the ground connection is open and the magneto remains operative. When pressure is put upon the key, or it is removed, the primary circuit is grounded and the magneto becomes inoperative for the time being. Either the key or the knurled button is supplied with the switch and the whole is brightly nickeled and finished in the usual thorough Bosch manner.

ST. LOUIS SHOW STAGED IN GENUINE PINE TREE FOREST

Fifty-eight Makes of Pleasure Cars and Twenty-three of Trucks Housed Mid a Resinous Atmosphere—Complete List of Exhibits.

Forest Park, which is in St. Louis, Mo., looked more like a real forest last week than it ever did before—at least since civilization leveled its primeval grandeur—and the reason for the wonderfully quick out-cropping of wooded beauty was the seventh annual automobile show of the St. Louis Automobile Manufacturers' and Dealers' Association which held the boards from the evening of October 6th to the evening of October 11th. All told, some 58 different brands of pleasure cars, of which seven represented the products of electric makers, and 23 makes of commercial vehicles were housed in a pine tree park.

For the purpose, the 40,000-odd square feet of floor space under the roof was transformed into a fall forest scene with the aid of pine trees in all the glory of their autumn foliage, glory that was set off by a profusion of Southern smilax and chrysanthemums entwined among the branches. At the entrance, two immense beds of potted plants helped complete the illusion, and the exhibits were separated by white lattice fences loaded down with more smilax and chrysanthemums. The complete list of exhibitors was as follows:

Gasolene pleasure cars: Anselm-Ganahl Auto Co., Regal; Bond Automobile Co., Wahl; Buick Motor Co., Buick; Burns-Ramsden Motor Car Co., Rambler; Cadillac Automobile Co., Cadillac; J. I. Case T. M. Co., Case; Cole Motor Co., Cole; Colonial Motor Car Co., Maxwell; Dorris Motor Car Co., Dorris; Ford Motor Car Co., Ford; Franklin Automobile Co., Franklin; General Motor Car Co., Hupmobile; Grand Motor Car Co., Auburn; Halsey Automobile Co., Packard; Heinrich Auto Co., King and Palmer-Singer; Hudson-Phillips Motor Car Co., Hudson; Ideal Motor Sales Co., Meteor; Johnson Automobile Co., Moline and Empire; Kardell Motor Car Co., Reo and Chevrolet; Lewis Automobile Co., Marion and Stevens-Duryea; Lindsay Motor Car Co., Premier, Paige and Fiat; Locomobile Co., Locomobile; Marshall Bros. Livery Co., Firestone-Columbus; Missouri Motor Car Co., Marmon; Moon Motor Car Co., Moon; Mound City Buggy Co., Jackson; New York Motor Car Co., Pathfinder; Oakland Auto Co., Oakland; Oldsmobile Co., Oldsmobile; Overland Auto Co., Overland and Chandler; Park Automobile Co., Chalmers; Peerless Motor Car Sales Co., Peer-

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less; St. Louis Kissel Kar Co., Kissel Kar; St. Louis Stearns Auto Co., Stearns-Knight; South Side Auto Co., Stanley Steamer; Southern Motor Car Co., Haynes and Metz; Velie Motor Co., Velie; Von Arx Bros. Auto Co., Winton; Weber Implement & Automobile Co., Lozier, Mitchel and Detroiter; Weber Motor Car Co., Studebaker; Western Automobile Co., Pierce-Arrow; White Motor Car Co., White.

Electric pleasure cars: Marshall Bros. Livery Co., Columbus; Ohio Electric Sales Co., Ohio; Park Auto Co., Baker; Priesmeyer-Stevens Auto Co., Waverly; Rauch & Lang Sales Co., Rauch & Lang; The Webb Co., Buffalo; Woods Electric Vehicle Co., Woods.

Commercial vehicles: Buick Motor Co., Buick; Cabany Motor Car Co., Indiana and Knox Tractor; Dorris Motor Car Co., Dorhis; Federal Truck Co., Federal and Stewart; General Motors Truck Co., G. M. C.; Halsey Automobile Co., Packard; Igou Motor Co., Jos. W. Moon truck; International Harvester Co., International; Kardell Motor Car Co., Reo and Chase; Lewis Automobile Co., Adams; Locomobile Co., Locomobile, Merchants' Motor Truck Co., Commerce and Dart; Mogul Truck Co., Mogul; Park Automobile Co., Baker electric; Peerless Motor Car Sales Co., Peerless; St. Louis Kissel Kar Co., Kissel Kar; Velie Motor Co., Velie; Western Automobile Co., Pierce-Arrow; White Motor Car Co., White.

Moline Adopts Full-Floating Axle.

The most important change that has been made by the Moline Automobile Co., of East Moline, Ill., in its newer series cars is embraced in the substitution of a full-floating rear axle for the semi-floating member that has been used in the past. In the new axle, the wheels are carried on double annular ball bearings and the wheel flange is fastened to the wheel by eight studs and nuts. Another slight change, calculated to increase efficiency and reduce vibration, concerns the motor, in which the reciprocating parts have been lightened, though their factor of safety remains the same. The bore and stroke remain 4⅛ and 6 inches, respectively, and aside from these two changes the Moline line remains practically the same insofar as the chassis is concerned. In the bodies, the lines have been improved by the adoption of a new style bell back and appearance and wearing qualities have been made better by the use of finer grade upholstery leather and top fabric. Prices remain unchanged.

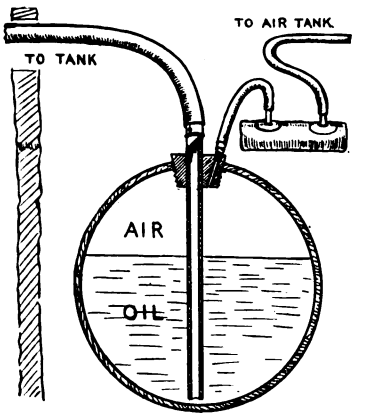
The K.-W. Ignition Co. has let contracts for an enlargement of its plant in Cleveland. The addition will constitute two one-story buildings, each 60 x 125 feet, of brick and steel construction.

BLOWING BARRELS OF OIL INTO THE GARAGE TANK

Oil Transferring Scheme That Saves Time and Labor — Making Tire Inflating Apparatus Serve Another Useful End.

It may have been perfectly orthodox in the days when steam engines were young to charge that the now famous lad was lazy because he rigged a piece of string from the walking-beam to the valve-handle of his engine to save himself the trouble of turning the valve by hand every time the groaning machine made one of its long, laborious strokes; but, nevertheless, that was not the right way to look at the incident.

In these days they do such things better; for when a man evolves a plan for doing something in an easier way than usual he is permitted to get a patent, collect all the money he can on the strength of it and take his ease for the rest of his life—perhaps. What a pity that kid couldn't get a patent on "means operated by an engine for opening and closing its valves"! He would have had a grip on the tail of the engine industry that would make George Selden's big clamps look like a pair of tweezers.



PNEUMATIC OIL TRANSFER

All of which random thoughts are prompted by the fact that somebody in the American Garage & Machine Shop, which is located at 1,411 Locust street, Philadelphia, got peeved at the time and energy wasted in transferring lubricating oil from sundry barrels to the storage tank, and, remarking, sotto voce, "Oil be blowed!" proceeded to blow it, literally, out of the barrel into the tank. While the accompanying life-like drawing shows how the idea was worked out, a few words of explanation will help things along.

As it was not practicable to empty the oil directly from a barrel into the tank, as one would empty a can of gasolene into the tank on the car, a man used to do the job with an "armstrong" pump. He used to. Now he removes the bung from the bunghole and screws in its place a tapered metal plug through which passes a pipe reaching practically to the bottom of the barrel. The upper end of the pipe is connected by means of a hose with the tank. Another hole, a much smaller one, is drilled through the plug alongside the big one, and to this is connected an air hose through which passes compressed air from the big garage tank used for inflating tires. A short piece of an old inner tube, sealed at both ends and provided with two slip valves, is used as a convenient way of making connections with the ordinary tire valve fittings.

When a barrel of oil comes in, no longer do the hands look furtively at each other until the garage devil—doubtless they have devils in garages—appears and gets the job of pushing the pump, or else the boss singles out some other unfortunate to do it. Someone steps up briskly and hauls out the pneumatic apparatus, puts the plug in the barrel, sticks the hose in the tank and makes connection with the air line, turns the cock and—walks off while the oil gurgles "Well, I'll be blowed!"

Gasolene Exports and Prices Vary.

In July of the present year the export of gasolene from the United States totaled $8,054,793 gallons and was valued at $1,285,914, an average of 16 cents a gallon, while in July, 1912, the export was 7,402,652, valued at $792,331, an average of 10.7 cents per gallon; this is an increase of 9 per cent. in volume and 62 per cent. in value. The average prices of the fuel shipped to various countries varied, even in the same month.

In July, 1912, the shipments, value and average prices were: Other Europe, 20,090, $4,137, $.250; Canada, 6,605,957, $666,143, $.101; Argentina, 47,500, $8,175, $.172; Brazil, 344,200, $49,485, $.143; British Oceania, 220,800, $37,942, $.171; Other Countries, 164,099, $26,449, $.161. The shipments, value and average price in July, 1913, were: Other Europe, 549,250, $91,213, $.166; Canada, 4,511,012, $643,790, $.147; Argentina, 300,000, $41,850, $.139; Brazil, 2,213,425, $408,312, $.184; Other Countries, 481,106, $100,749, $.21.

Dirt that Chokes Back Light.

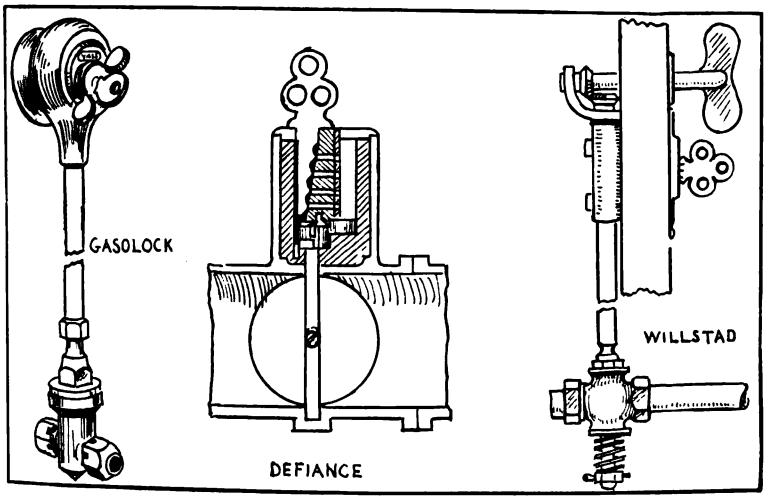
The amount of light that can be absorbed or choked back by a thin film of dirt on an electric light bulb or on a reflector is simply amazing. The glass is easily brightened up with a little alcohol on a rag, or even on a piece of paper, but gasolene should not be used for the purpose.

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LOCKING DEVICES THAT DISCOURAGE THIEVES

Ingenious Contrivances, for Use in the Garage and on the Road, That May be Relied Upon for Protection—Four Types of Locks Made Plain—Crippling a Car Without Totally Disabling It.

It was very quiet in the garage. Sanderson's car was the only one left in its "stall." All the others, under the guidance of their owners, had passed out and down the street, disappearing in the general direction whence the business maelstrom soon would surge. The polisher was putting the finishing touches on Sanderson's car and, after he had switched off the electric lights over the washing stand, Billy Rea, humanitarian garage proprietor, retired to his glass-encased cubby-hole of an office to smoke his morning cigar.



THREE TYPES OF LOCKS THAT STOP THE FLOW OF FUEL

When he had the perfecto burning to his satisfaction, he tilted back in his swivel chair, carefully adjusted his feet on the slide of his desk and reached for the morning paper. For a while he read contentedly, methodically snipping out the items that interested him and tucking them into pigeon holes for future reference. His cigar had burned itself nearly out by the time he reached the back page, and when his eye lit on a five-line "story" buried under the New Jersey correspondence he first chuckled a little to himself and then snipped out the item and put it under the glass top on his desk where he could see it.

It was a very ordinary item that is reprinted by nearly every metropolitan newspaper about five days a week with only the names and dates changed. It narrated, briefly, that when T. E. Cunningham, broker, went to find his car, after having left it standing in front of his office for about 15 minutes, the car was missing; the efforts of the police to gain a clue to its whereabouts had proved unavailing.

As Rea consigned the much-mutilated newspaper to the waste basket, the clipping under the glass desk top again came in his line of vision and the sight of the paper plunged him into a sort of reverie that was only interrupted by the entrance of the bustling figure of Sanderson.

Drawing Inspiration from Scares.

"S'matter, Billy?" he heralded, through a blue haze of cigar smoke; "why the semi-cynical smile? Anybody been telling you fish stories?"

"Matter?" grunted Rea. "Matter enough; take a look at that!" he added, pointing to the clipping with a match that was due to be applied to a second cigar.

Sanderson bent over and read the clipping and when he straightened up he wanted to know "what in thunder that had to do with the price of butter in Catskill."

"Only this," elucidated Rea, "this fellow Cunningham is an average individual, I dare say, but he is a good deal like you. You never thought of buying a fire extinguisher until you were scared into it; now you would not venture out without it. But have you got any kind of a lock on your car? Is your car any less likely to be stolen than any one else's car?"

"But I can't get a lock to fit my car," Sanderson defended. "You know as well as I do that she's a pretty old boat and these new fangled trappings don't seem to fit in. I know I need one, all right, and I tried to get a gear lever lock only last week, but it was no go; the thing wouldn't fit on my old progressive lever."

Locks as Profitable Stock in Trade.

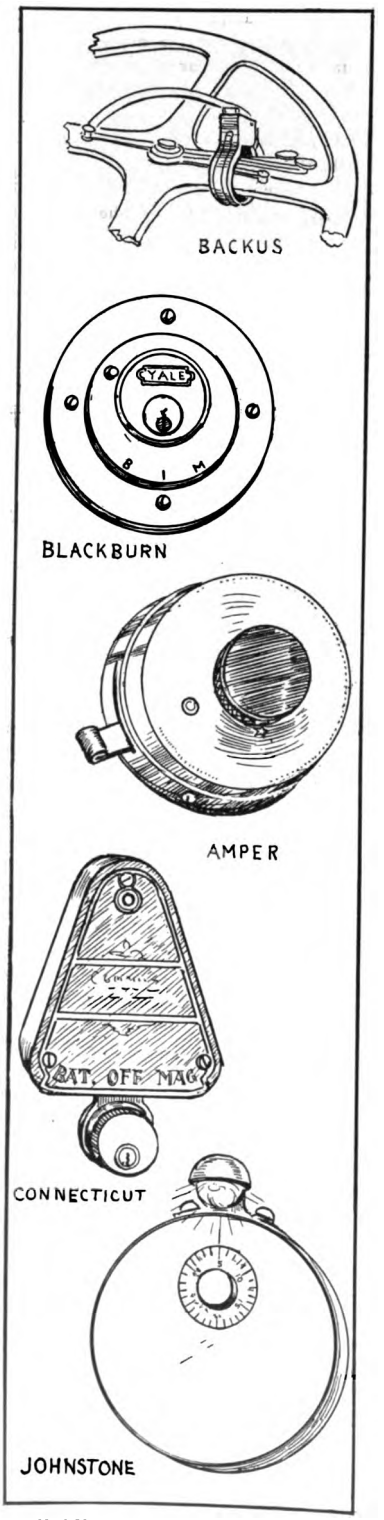
"Foolish mortal!" responded Rea, "do you imagine there is only one kind of a lock in the world? Do you think one kind of a lock will fit every make of car? Hadn't you ever thought that there must be a whole lot of different kinds of locks? Evidently you had not, or you would not have asked such a foolish question. Well, let me tell you for your own information that there are more than a score of locking devices and that no two of them are exactly alike. I know, because I went to the trouble to look them all up one day because I knew you fellows would get scared some time or another and would come looking for locks. I knew, too, that if I did not have some of 'em here you'd get your locks somewhere else, and letting you buy supplies downtown isn't getting me anywhere.

"Got to go soon?" as Sanderson buttoned his duster. "Well, see you to-night, and," Rea added as a parting shot, "I hope I see your car, too." As Sanderson "wound up his boiler," to express the action in the language of Jerry the polisher, Rea turned back to his desk and took out of the lower right hand drawer, which was a veritable catalog storehouse, a bunch of catalogs contained in a stiff folder labeled "Locking Devices," and over these he proceeded to pore for the rest of the morning, only disturbing himself to answer the telephone.

Variety Disclosed by Catalogs.

What Rea found in the catalogs any one else can find who has the inclination to do so. He found that there are easily more than a score of different locking devices, and so he was not very much surprised, but he was surprised at the variety of uses to which they could be put, or rather the variety in the ways in which they could be made to lock a car effectually. Finally, he

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VARIETY IN IGNITION LOCKS

arranged the catalogs neatly in four piles, putting in the first pile all the catalogs showing gasolene line locks, in the second pile all those that showed ignition locks in their several forms, in the third pile the various devices designed to lock steering gears, and in the fourth, devices designed to lock either the gear shift, emergency brake or starting levers. And in order to avoid confusion because of the great variety that obtains, it is best in making plain the devices to follow Rea's plan—to examine each class separately.

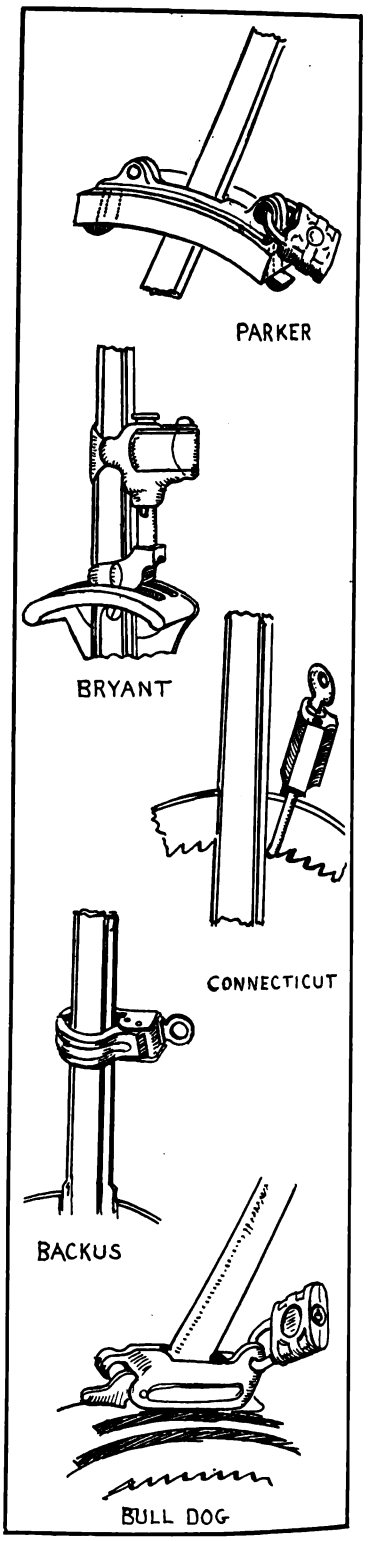
Duties of the Theoretical Lock.

To examine locking devices in the abstract makes plain that there are a number of things the ideal lock should do and a number of things it should not do. Obviously, it should lock a car so as to effectually discourage any one other than the person holding the "combination" from running the car; that is the prime requisite of any lock. But in doing so it should not lock the car so effectually that it cannot be moved in case of emergency, for instance. It should be possible, in other words, to move the car out of a garage in case of fire, or away from the immediate vicinity of a fire in the street, and because it is not always necessary to operate the engine to move a car, which on occasion can be pushed by hand, devices which lock the gasolene line so that no fuel can be passed to the engine serve an admirable purpose. Briefly, they prevent a car being stolen—unless the thief is bold enough to tow it away behind another car, which is not likely—though they do not cripple it so that it cannot be moved if necessary for the salvation of the car.

Probably the best known of devices designed for the purpose is the one that interrupts the flow of fuel from the tank to the carburetter; obviously not enough gasolene would remain in the carburetter to permit of the car being driven very far. The Willstad lock is of this type; it is made by the Willstad Mfg. Co. of Chicago, Ill., and as the accompanying illustration makes plain, it is designed to be placed either on the dashboard or on the heel board. In its essential elements it consists of a Yale lock and a long lever which connects with the valve proper in the fuel line. When the little lever is turned the lock locks itself; the Yale key unlocks it. The Gasolock, which is produced by the Auto Lock and Specialty Co., of Detroit, Mich., operates on exactly the same principle, the essential difference being that the keyhole is placed in the center of the thumb button.

Shutting Off the Flow of Fuel.

Departing a little from the idea expressed by the Gasolock and the Willstad, the Defiance lock, which is produced by the Defiance Manifold Lock Co., goes a little further and prevents the car from being operated on even what gasolene may be left in the carburetter. Instead of locking the



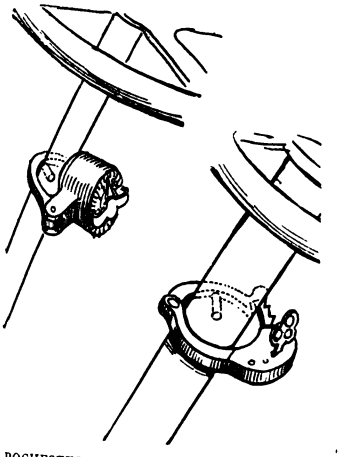
LOCKS FOR GEAR LEVERS

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fuel line, the Defiance places an effectual bar to the entrance of "mixture" into the cylinders, as is shown by the picture. Like the others, the Defiance incorporates a Yale lock, though unlike them it is fitted to the intake manifold. The device is nothing more complicated than a simple butterfly valve and it can be fitted to almost any manifold.

Locking the Ignition Apparatus.

Devices that lock the ignition switch are not new, of course, for there is scarcely a manufacturer of ignition apparatus who does not produce at least one lock of the kind; incidentally, a great many cars as they come from the factory are equipped with ignition locks, though there still remain quite a number of devices on the market which are suitable for and can be attached to older cars not so equipped. Locks of this type, too, have the advantage that

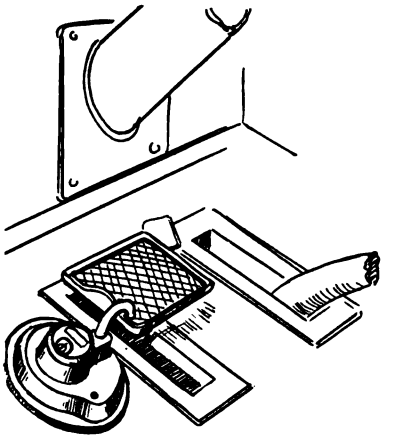


ROCHESTER COMBINATION AND KEY

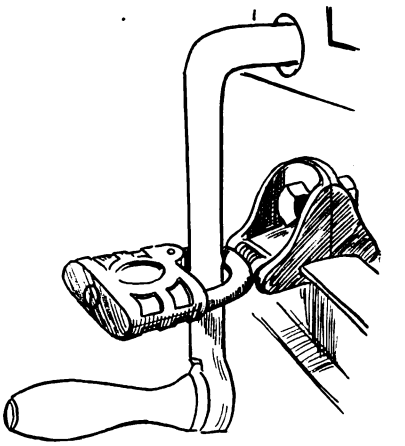
they do not cripple a car, though they effectually prevent the unwelcome attention of those who have no moral right to the property of others.

The Blackburn Autolock switch, which is produced by the Blackburn Specialty Co., of Cleveland, Ohio, belongs in this class and the type that is illustrated has been especially devised for attachment to Ford cars. As the picture shows, it is little more than the conventional Yale lock in appearance. In operation, the key, which also serves as the switch handle, can be turned either to the right for the battery or to the left for the magneto. Except when the key is in the neutral position, with the current turned off, the key cannot be removed; even when the screws holding the switch are removed, the lock cannot be tampered with. In the Connecticut lock, which is made by the Connecticut Telephone & Electric Co., of Meriden, Conn., the operation and principle are just the same, though the location of the Yale lock is slightly different, as is made plain by the picture.

By way of eliminating the possibility of inconvenience resulting from lost or mislaid keys, several manufacturers have developed ignition locks that are released by a combination, two of them being shown herewith. In the first, which is made by the Johnstone Auto Lock Co., of Cleveland, the appearance and operation of the combination mechanism is exactly the same as that on any safe, and so that the device can be operated at night equally as well as during the day, a tiny pilot lamp is mounted over the combination knob. In the other, which is produced by the Amper Electric Co., of Lockport, N. Y., sight of the lock is not necessary for indication of the combination is given audibly. In other words, the knob is turned right or left, according to the combination, a certain number of "clicks,"



TABOR PEDAL LOCK



BREMER-WILSON CRANK LOCK

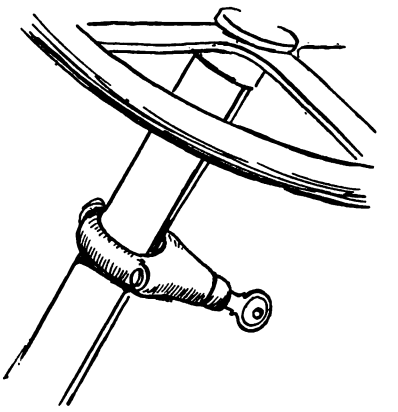
the number being determined when the combination is set.

Device With Variety of Uses.

The Backus lock, which is made by the Backus Novelty Co., of Smethport, Pa., differs from any of the others in that it can be put to a variety of uses. In one illustration it is shown clamped around both spark and throttle levers and in another it is shown fastening the gear shift and emergency brake levers together, and in either case the lock is effective in preventing both theft and "joy" riding. The lock is in effect a padlock, though it is more like a set of mechanical fingers which can be clamped around anything clampable. The fingers need not necessarily be together, for they will lock in any position; they are released, of course, by a key. The particular advantage of this lock lies in its great utility, for not only can it be used to lock the car itself but it is equally serviceable for locking robes to the robe rail, or gloves to the steering wheel, or tires, or tool boxes, or very nearly anything else; it is, in fact, a good deal more than a mere car lock.

"Tying Up" the Steering Gear.

It is obvious that if a vehicle cannot be steered it cannot be driven very far, and



NO-RISKO STEERING GEAR LOCK

hence several makers have adopted this very obvious method of locking a car against theft. Among the pioneers in this line, the No-Risko lock, which is produced by the C. J. Rogers Mfg. Co., of Philadelphia, Pa., is distinctive in that it is designed to place a double lock on the car. In its simplest aspect it is nothing more than a small plunger controlled by a Corbin spring lock. The plunger is fastened to the steering column, which is drilled to receive it. Thus, when the car is left standing, pressure on the plunger effectually prevents the steering wheel being turned and at the same time breaks the ignition circuit. So that the car can be pushed about a garage, however, provision is made for locking only the ignition current by depressing the plunger only half way. In either case, the release of the plunger requires the insertion of the proper key.

The Rochester Safety lock, which is made by the Rochester Safety Lock Co., of Rochester, Ind., is quite similar to the No-Risko except that it is little more than a

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padlock with a plunger on its movable arm and that it does not break the ignition current. In operation, the lock is placed around the steering column with the plunger inserted through a hole drilled for its reception. Two types of these locks are produced, one being released by a combination and the other requiring a key; both types are illustrated herewith.

Temporarily Crippling Gear Levers.

If it is impossible to drive a car very far with the steering gear locked so that it cannot be moved, it is no easier to drive it with the gears locked in neutral. The gear lever lock, however, possesses the advantage that it still permits the car to be moved about a garage, and if necessary it could be towed out of danger from fire. Of the several devices of the kind on the market, the Bryant, which is produced by the E. H. Bryant Co., of Cleveland, Ohio, probably is best known, for it was among the first of its kind to make its appearance.

The Bryant lock consists of a body fastened permanently to the lever and having a pair of offset wedges at its lower end Ordinarily the whole device is held clear of the H-plate by a spring contained in its body and it offers no hindrance to normal gear shifting. To lock the car, the lever has only to be moved to neutral and the whole device pushed downward when the wedges fit into the slots in the H-plate and prevent the lever being moved. The turn of a Yale key releases the lock.

The Bulldog lock, which is made by the Consolidated Machine Works of Chicago, Ill., and the Parker, which is produced by the General Utility Co. of Philadelphia, Pa., both are somewhat like the Bryant lock in operation, though instead of attaching to the gear lever, both attach to the H-plate, the Bulldog remaining permanently in place and the Parker being put in position only when the car is to be locker. Both of these devices make it impossible to move the gear shift lever after they have once been set and in both cases a small ordinary padlock is used.

Brake Lock Constitutes Insurance.

It is equally hard, of course, to start a car with the brakes locked—or it should be if the brakes are in good condition—as it is to start it with either the steering gear, the ignition, the gear shift lever or the gasolene line locked, and with this fact in mind the Connecticut Telephone & Electric Co., of Meriden, Conn., has brought out the brake lock that is illustrated herewith. In operation, the lock is placed around the emergency brake ratchet quadrant after the brake has been set, and as a great many cars are so constructed that the first movement of the emergency brake lever disengages the clutch, the lock does not prevent the car being moved, for the car can be locked by moving the lever only enough to disengage the clutch without setting the brakes. Manifestly, where cars are left standing on a grade, the mere fact that the brake can be locked constitutes practical insurance against damage resulting from inquisitive youngsters or malicious individuals of more mature years.

Locking the Clutch and the Crank.

By way of providing a positive lock, the Loveley Sales Co. of Detroit, Mich., has attacked the problem in another way—the very simple way of locking the clutch out of engagement. Its product, styled the Tabor lock, is illustrated herewith and scarcely requires description. It is little more than a movable hook that is fastened to the floorboards and than can be swung around so as to hold the clutch pedal down. When the proper key is used, the hook can be moved clear of the pedal and is so small that it cannot interfere with the operation of the car.

The Bremer-Wilson Mfg. Co., of Chicago, Ill., which produces accessories in considerable variety, has attempted a solution of the problem in still another way, the theory being that so long as the engine cannot be started, the car cannot be stolen. The method is made quite plain in the accompanying illustration, though obviously it is applicable only to cars that still carry their starting cranks in the conventional place. The device itself consists of a hinged padlock which is clamped to the frame in such a way that when the starting crank is down the lock can be swung over it and fastened.

Meets Situation with Old-Time Law.

With so many cities juggling with their traffic ordinances in an effort to regulate the taxicab business it may appear novel that St. Paul, Minn., should find a way out of an "overcharging" situation through the enforcement of an ordinance which was passed in 1884; this statute requires that the driver of every vehicle which operates for hire shall pay a yearly license of one dollar and wear a numbered badge. The city has charges, which were fixed by an ordinance in 1909, and upon recent complaints that chuffeurs were overcharging, the mayor ordered the enforcement of the 1884 ordinance that the complaining passengers may make a record of the offending chauffeur. Also, any chauffeur found guilty will be barred from driving.

The ordinance governing fares, which is to be more strictly enforced, fixes $5 as the maximum charge for the first hour for seven-passenger touring cars and $4 each for each additional hour, but the charge for a 10-hour day must not exceed $25; for five-passenger cars the ratio is $4 and $3. Passengers, however, will be taken from the depot to hotels for 50 cents each, light baggage included.

The rate for taxicabs is not more than $1.50 an hour or not more than $1 for each succeeding hour. Fifty cents a mile for each passenger also is fixed by the ordinance.

Officials of the taxicab companies and owners of hired cars declared that they would fight the order. They contend that they cannot run an automobile with profit at the rate of $1.50 per hour named in the ordinance and will carry the case into the courts.

Policeman-Garageman Loses His Job.

Many of Chicago's citizens earlier in the year were puzzled to know whether John V. Lacey was a police sergeant, a garage proprietor or both. Lacey insisted he was a sergeant, but certain accusers maintained that he was both. Lacey found out last week from the Civil Service trial board that he isn't a sergeant any more, but whether he will blossom out as a really truly garageman has not yet developed. He was dismissed for trying to mix business and police duty.

"Sergeant Lacey while on duty at the Fifth precinct station managed an automobile garage known as the Chicago Auto Livery, 3443 Wabash avenue, between July 1 and 31, 1913," said the Civil Service Commission in the charge on which Lacey was found guilty. "He also furnished for public hire an automobile carrying a license issued by the State of Indiana in violation of the laws governing public motor vehicles."

Mrs. M. H. Lamont 2953 Vernon avenue, where the sergeant roomed, asserted she was sole owner, and produced vouchers purporting to be signed by herself to prove it, but direct evidence was introduced as to Lacey's connection with the livery.

A Really New Use for the Automobile!

So many novel uses are found for automobiles in these days of efficient publicity men that it has to be a good one to merit more than passing attention, but out in Canton, Ill., last week Lewis Howell, who is a farmer, not a publicity man, furnished the material for a very good story.

His barn caught fire from spontaneous combustion and the blaze was in such a place that the fire fighters could not get at it. The whole structure seemed doomed until someone had a happy thought. He backed the form's high-horsepowered gasolene tractor plow up to the side of the barn, hitched a chain to the framework and the tractor walked away with the side of the barn. The fire fighters then turned a stream of water into the alfalfa.

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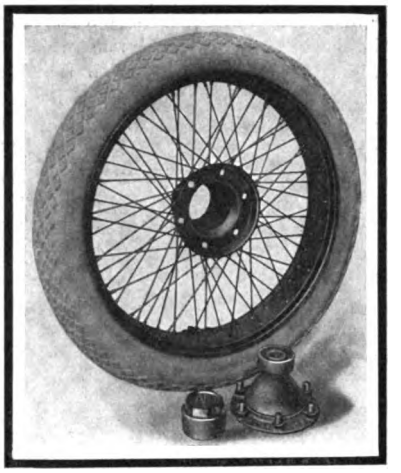
HOUK WIRE WHEEL DESIGN ELIMINATES OLD TROUBLES

One Self-tightening Nut Centers and Locks Wheel—No Adjustments to Forget—Spoking System Provides for All Stresses.

It often is discovered, after more or less experience with various different ways of doing a given thing, that the simplest way is the best way, all things considered; and an excellent example of this is to be found in the locking system of the Houk detachable wire wheel, the product of the Houk Mfg. Co., of Buffalo and New York. As has been stated in Motor World, the Houk company is the reorganized and refinanced McCue company, in which George W. Houk, of Philadelphia, recently acquired a controlling interest; Houk brought with him the American patent rights to the Rudge-Whitworth detachable wheel, and upon these patents is based the triple-spoked, automatically locking detachable wire wheel that the company is manufacturing.

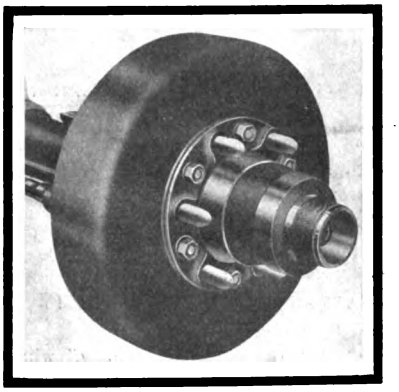
The triple spoking enables the wheel to resist various stresses—vertical stresses due to the weight of the car, torque due to the application of driving power and lateral stresses due to side thrust. Triple spoking is the result of a process of evolution that passed through more problem phases than would seem possible, for at first thought the matter seems simple—which it is not. In the old spoking system two rows of spokes, one from each hub flange, extended to the rim; each pair of spokes formed a triangle with the hub as a base and a point beyond the rim as the imaginary apex. The stability of a triangle—its ability to resist lateral pressure—depends upon the width of its base in proportion to its height. As practical considerations make it impossible to bring the ends of the spokes close together in the rim, and so bring the apex low while maintaining the base width, the effect was that of a high, narrow triangle, with little resistance to lateral pressure. Further, in this system the tread center was held out somewhere near the middle of the hub, whereas its proper place is in a line passing close to the inner flange and the inner and larger bearing. With the idea of correcting the position of the tread the plan was then adopted of crossing the spokes, running the spokes from the outer hub flange to the inner side of the rim, and vice versa, and setting back the rim by lengthening the spokes springing from the outer hub flange, shortening the inner row of spokes and, of course, changing the angles. The Houk company states that while this system produces a wheel that is statically strong, it does not meet all the requirements of actual road work.

In the triple spoking system, which has been found to possess the required stability in all directions, there are three rows of spokes, two springing from the inner hub flange and one from the outer flange. One of the inner rows is vertical, running



HOUK WHEEL COMPONENTS

directly from the flange to the inner edge of the rim; in the inner row the spokes run to the outside edge of the rim, the two rows making a triangle with the inner hub flange as the apex and the rim as the base. The third set of spokes extends from the outer hub flange to the outer edge of the



DRIVING STUDS IN DETAIL

rim. The theory is that the spokes that are vertical carry part of the radial load and transmit the driving stresses, while the spokes placed at an angle take care of the lateral thrusts; and it is said that theory and practice agree perfectly, for the triple-spoked wheels stand up and remain true under the most trying conditions.

The very essence of simplicity is embodied in the hub locking device, and this element of simplicity is of the utmost importance in a detachable wheel, where the forgetting of some little thing, however, simple, might lead to serious trouble. In the Houk wheel there is nothing to forget, if the wheel is put on at all, and even if part of the attaching process—which is simply the screwing up of a nut—is neglected or forgotten the nut will automatically and properly tighten itself.

The hub consists of two parts: the inner hub, which is permanently mounted on the axle end or steering stub, according to whether the wheel is a driving or a steering wheel, and carries the ball or roller bearings, and the outer hub or shell from which the spokes spring and which is part and parcel of the wheel itself. It is the office of the locking device to hold the wheel in place on the inner hub while permitting its removal easily and rapidly.

The inside flange of the inner hub is provided with a ring of horizontally projecting studs which enter corresponding holes in the inner flange of the outer hub when the wheel is pushed into place on the axle end. The studs transmit the driving stresses. The outer end of the inner hub is threaded and upon the thread is screwed a nut that is a rather loose fit on the threads. The inner edge of the nut is beveled, and the beveled part is split in several places. The outer end of the bore of the shell hub on the wheel proper is internally beveled, the taper corresponding with that of the split nut. Therefore, when the wheel is put in place on the axle with the driving studs entered in the holes, and the tapered nut is screwed home, its beveled surface is wedged into the beveled bore of the outer hub, and the wheel is pushed hard home and at the same time is centered. Further, the wedging action causes the inner end of the split nut to be forced down against the thread, so that it is clamped hard and tight in place and movement is impossible.

Simple though the device is, there is still more to it than this. The threads are so cut that in order to tighten a given nut it turns in the opposite direction to that in which the wheel turns when the car is running forward; on the right side of the car the threads are left-handed, and on the left car side they are right-handed. If a nut is not properly tightened the fact that there is a slight difference in the diameters of the nut and the thread it screws onto results in a differential action when the wheel rolls forward, gradually screwing the nut into place. A very short run suffices to fully tighten the nut, which cannot be excessively tightened because the clamping action equalizes the differences of diameter and stops the differential action, and running backward has no effect because the wedging holds the parts together securely.

Reasonable weight is a feature of the

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Houk wheel, a wheel designed to take a 36 x 4½-inch tire, for instance, weighing 37½ pounds. The wheels are made in all sizes and with hubs adapted to take bearings commonly used with artillery wheels.

Simple Repair of Honeycomb Radiator.

Leaky honeycomb radiators are not the easiest thing in the world to repair, though they can be repaired quite easily by any one who is handy with a soldering iron, provided only some method suitable for use by the amateur repairman is employed. If the leaky spot is filed bright with a fine file, a tiny, almost imperceptible crack will appear, and it is through this crack that the water seeps. If any attempt is made to solder the joint there is danger either that other seams will be melted open or that an insufficient amount of solder will adhere to the crack to make the job at all permanent. By far the better way is to enlarge the opening with a triangular file—used as a file and not as a lever—and then to solder into it a length of thin brass wire that has been thoroughly cleaned and coated with some soldering flux. In following this method it is a good plan to first solder the end of the brass wire to the radiator an inch or so from the break. If the wire then is left long enough it can be conveniently held in place while the soldering iron is run along it, using plenty of solder. To make the finished job a neat one, the brass wire afterward can be filed down flush with the radiator.

To Eke Out the Gasolene Supply.

Occasionally, when an engine gives symptoms of dying a perfectly natural death because of a shortage of fuel, it can be induced to fire long enough to reach a supply station by violently jouncing the car on its springs, the theory being that a small quantity of fuel may remain in one part of the tank lower than the outlet to the carburetter. This is particularly true of force feed systems where the outlet projects for some little distance up from the bottom of the tank.

Care Needed in Crossing Railroad Tracks.

In crossing a railroad track that must be taken slowly on account of high rails, it is a wise precaution to drop to a low gear so that there will be no danger of stalling the engine and leaving the car stranded and at the mercy of an approaching train.

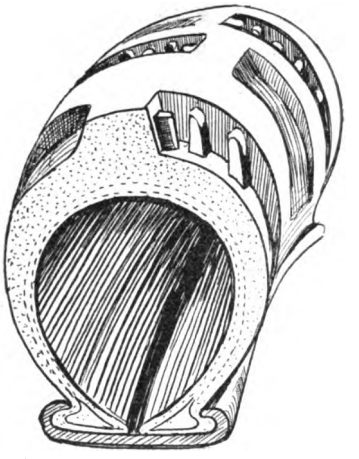
To Keep Windshields Free of Water.

Common yellow soap is said to be about as good as anything for keeping the front of a windshield free from drops of water when driving in the rain. The glass should be rubbed with the soap and then polished with a dry cloth.

OVERMAN PNEUMATIC TIRE RETAINS CUSHION FEATURES

New Shoe, to Carry Air Tube, Built to Obtain Advantages of Solid Without Its Drawbacks—Theory of Its Construction.

Having thoroughly tried out its semi-solid cushion tire and demonstrated that while it is eminently suited to the needs of the user of commercial veheicles it is, perhaps, less desirable for pleasure cars, for a number of reasons, than is a tire which relies primarily upon air for its resiliency and which can be fitted to any standard rim by any one, the Overman Tire Co., of 250 West 54th street, New York City, has developed its original design for use with the ordinary air inner tube on ordinary clincher or Q. D. rims. The result is a pneumatic cushion tread tire that is so resistant to natural wear and to the unwelcome attention of nails or other things that may cause punctures and blow-outs that the makers feel justified in guaranteeing it for 5,000 miles of service.



OVERMAN PNEUMATIC CUSHION

The new tire, a cross section of which is illustrated herewith, differs from all other tires primarily in the thickness of its tread, and secondarily in that the tread has formed in it a series of deep indentations extending down either side alternately and slightly overlapping at the center. Between each of the indentations there are hollowed out places at the sides, the purpose of which is to assist in the radiation of natural heat. The deeper identations in the tread serve three principal purposes: They increase the resilience of the thick tread; they give it what is claimed to be a positive non-skidding grip on the roadway; and they permit natural distortion of the rubber in a peripheral direction due to the weight and progress of the car. Their purpose, in fact, is to eliminate one of the principal defects of the solid tire, which is apparent in the fact that the weight of the car necessitates that a ridge of rubber be pushed around continually while the vehicle is in motion, with the result that the tread soon loosens itself from the base and becomes detached. The indentations, it is claimed, eliminate this difficulty. The weight per tire, of the Overman pneumatic cushion is approximately 10 pounds more than the weight of the ordinary pneumatic tire.

Cable Tire Sued by its Attorney.

Charles DeHart Brower, a New York attorney, may have had high hopes for the Cable Pneumatic Tire Co. when he helped incorporate that company some time ago, but his hopes evidently failed of complete realization, for he this week took judgment against the company in the Supreme Court for New York county; he demanded $2,500 for legal services and got it, or, rather, the judgment, with interest. The tire company has an address at 315 4th avenue, but never became a factor in the tire making field.

Stromberg Branch Takes 3-Story Building.

The Stromberg Motor Devices Co.'s New York branch has been removed from 1926 Broadway to 146 West 56th street. At the latter address, it occupies a three-story building, which includes separate sales and stock rooms and an extensive service and installation department. The branch, which directs the Stromberg carburetter business in all of the Atlantic Coast States, remains in charge of Roger B. Whitman.

Claims Wrong Body, but Has to Pay.

Ludwig Littauer, of New York City, claims he should not be made to pay for a used Panhard which he bought from the Cooperative Used Car Co. March 13, 1913, because it did not have the body he contracted for; but when the company brought suit in the New York City Court it secured judgment last week for $1,112.87, the balance claimed on the transaction.

McKaig-Hatch to Make Forgings.

McKaig-Hatch, Inc., which recently was organized in Buffalo, N. Y., to manufacture drop forgings and combination pliers, has located at 1584-1590 Niagara street. Its officers are Archibald McKaig, president; Harry C. Young, vice-president, and Chauncey R. Hatch, secretary and treasurer.

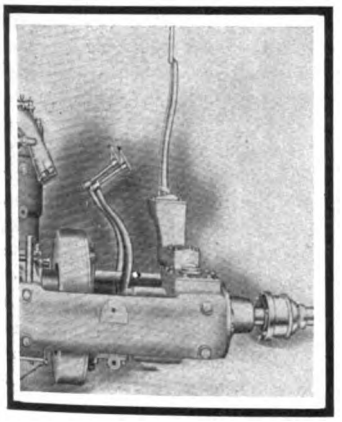
The White Co., of Cleveland, is again adding to its plant. The enlargement now under way will comprise a one-story building, 30 x 200 feet.

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UNIT CONSTRUCTION THAT AIDS CLEAN DESIGN

Advantages That are Obtained by Uniting Crank and Gear-case—Various Types of Intermediate Housings—How Unit Construction Facilitates Suspension—Other Advantages Great and Small.

The ancient and honorable aphorism which declares that "in union there is strength" and which has such a deep significance to patriotic Americans, is applicable in many ways that doubtless did not occur to the originator of the phrase. At least, it is certain that he—or was it she?—did not have automobiles in mind when the five significant little words were put together; yet the automobile embodies in its construction not a few features that illustrate strikingly the fact that unity begets strength. For that matter, the automobile as a whole is a

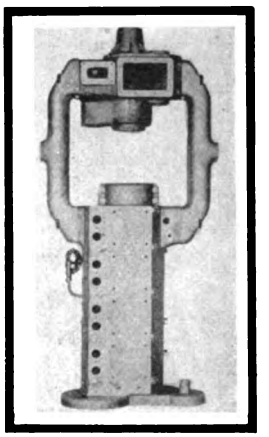


KNOX OPEN CASING

unit that certainly has amazing strength and power as the result of the unifying of many separate elements; but just now it is not so much the unity of the whole car as that of some of its components that is under consideration—to be specific, the joining together of the motor and the gearset to form what has come to be known as the unit power plant.

The fact that some cars are designed with unit power plants, while others have their motors and change-speed gears mounted separately, does not by any means signify that the advocates of the separate unit system are in error, any more than that the unit people are making a mistake. It simply goes to show that there are various ways of attaining a given end. Broadly speaking, the end sought is to produce a good car, and as good cars are built embodying both methods of construction it must be clear that both systems have excellent reasons for their existence. As to the points upon which the supporters of the two systems disagree—well, that is "something else again," and has no place here.

In the unit power plant system of construction the idea that is carried out is the joining together of the crankcase of the motor and the housing that encloses the



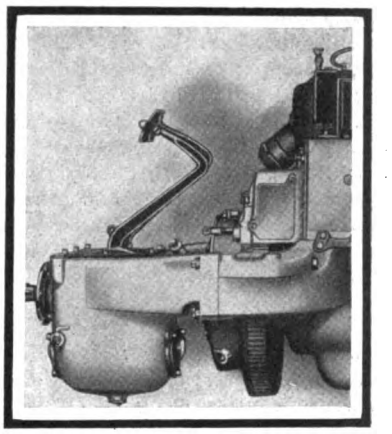
KNOX HOUSING

gears in such a way that the bearings in which the various shafts turn are held in permanent alignment once they are properly "lined up," and the entire unit can be mounted in the car without fear of its being affected by the twisting and "weaving" of the frame that is practically inevitable when the car passes over rough roads. Of course, where there can be no relative abnormal movement between the crankshaft and the primary gearshaft there can be no necessity for a universal joint, and so this is dispensed with between motor and gearset in unit power plants.

Pioneers in Unit Power Plants.

In addition to these cardinal points of advantage there are various detail benefits that are conferred by the unit idea. The housing forms an excellent means of mounting control pedals and levers, and in many instances facilitates the placing of the electric lighting and starting dynamo and motor. The housing of the clutch is such as to make it a comparatively easy matter to provide for its lubrication or to protect it from oil, according to whether it is intended to run in oil or dry. And where a motor has enclosed valve stems, as is common in modern engines, the enclosure of the flywheel puts out of sight about the last moving part that can well be covered up—which point may have no very great bearing on the actual running of the car, but has its effect in the matter of appearance, which helps some, in common parlance.

The honor of being the first American concern to adopt the unit power plant is claimed by the Stevens-Duryea Co., of Chicopee Falls, Mass., which in the fall of 1904 brought out a combined engine and



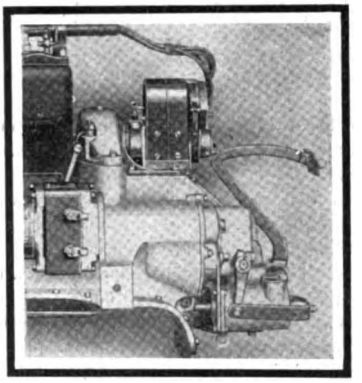
HUDSON UNDERSLUNG CRANKCASE

gearset which was mounted on a three-point support; the unit power plant on a three-point support is still a leading feature of the Stevens-Duryea car, and though many detail changes and improvements have been made in the machine in the nine years that have elapsed since the first unit model was put on the road, there is such a strong "family resemblance" between the old and the new that the relationship is perfectly clear.

In the Stevens-Duryea power plant, which includes a six-cylinder motor and a three-speed gearset, with a multiple disk clutch running dry between them, the housing is built up of sections of aluminum alloy bolted together and to the crankcase. The upper part of the housing over the flywheel and clutch is removable so that those parts are readily accessible—which is the case, by the way, with all unit power plants in which the flywheel and clutch are enclosed

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—and in addition, it contains in inspection cover that when removed leaves an opening quite large enough for all ordinary purposes, the larger section requiring removal only on the rare occasions when there is



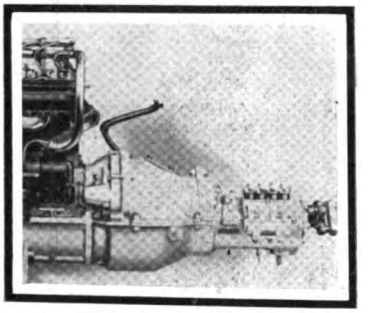
HUPP GEARCASE MOUNTING

need for removing the clutch or something equally momentous. The gearset occupies a comparatively small casing, being of unusually compact design, and upon this part of the housing is bolted the four-cylinder power-driven air-pump that is part of the regular equipment of every Stevens-Duryea. A long, tapering effect is the characteristic feature of the appearance of the housing back of the engine, and this has always been the case since this company "tied up" to the unit power plant.

Open Space for the Flywheel.

Differing radically from many other unit power plants in that the connecting section between the engine and gearcase does not form a housing for the clutch and flywheel, the design adopted by the Knox Automobile Co., of Springfield, Mass., is distinctive and has certain advantages of its own. The crankcase and gear housing are joined by hollow horizontal arms which go around the flywheel and are bolted to the main housings; the arms are provided with lugs which take the trunnions, one on each side, which form two of the three supports and are secured to the main side frames of the car; the third point, of course, is in front, at the middle of the unit. The clutch, which has three plates with cork inserts and runs dry, is in a flywheel housing of its own where neither oil nor dirt can interfere with its smooth action. The gear lever, and, of course, the slotted plate in which it works, are mounted on the gear housing. One arm —or "leg," as you please—of the connecting section forms a support for the dynamo-motor used for the electric lighting and starting system.

The idea of carrying the flywheel and clutch in an open space between the engine and gearset is adopted also in the six-cylinder 54-horsepower unit power plant of the Continental Motor Mfg. Co., of Detroit, whose engine, to cite one conspicuous example out of many, is installed in the car that is built by the Hudson Motor Car Co., of Detroit. As the picture shows, there are differences between the Hudson Continental unit power plant and other units that are more than superficial. It will be observed that the arms which make the connection are very short. On each side of the upper half of the motor crankcase is cast half of an arm; the other two halves are cast integral with the gearcase, which is underhung, and the arm members are bolted together just back of the flywheel. In the Hudson motor the three-point support plan is carried out by locating the single point at the rear end of the gearcase, while arms of the usual type at the front of the crankcase form the other two points. One of the



STEVENS-DURYEA REAR END

connecting arms has lugs to which the starting motor is bolted, in which position the driving pinion is conveniently meshed with teeth cut in the periphery of the exposed flywheel. The clutch, incidentally, has steel disks, with cork inserts, running in oil.

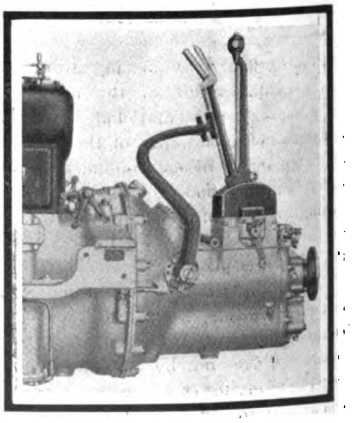
Enclosed Flywheel That Pumps Oil.

Differing considerably from all the foregoing types of unit construction, the plant of the Hupp Motor Car Co., of Detroit, turns the rear housing to account in an ingenious way by making it form part of the lubrication system of the motor. The lower half of the crankcase extends backward and downward and forms an oil reservoir into which the flywheel dips, throwing oil from its rim into a collector, from which it is led to all parts of the engine. The electric starting motor is bolted to the rear housing with its shaft passing into the enclosed space and driving the motor through a "silent" chain, and on the top of the casing the magneto is conveniently and accessibly mounted. The construction is exceedingly compact, as the picture shows. The unit is carried on three points, the single point being in front and the other two about opposite the flywheel, lugs being cast on the casing at that point.

As an example of clean, symmetrical design, the power plant of the Chalmers car is conspicuous, and is a credit to the engineers of the Chalmers Motor Car Co., of Detroit. The rear end of the crankcase is extended backward, the extension being flared to make room for the flywheel, and a corresponding flare formed on the forward end of the gearcase is bolted to it, substantial flanges being cast on the edges for the purpose. An inspection plate is fitted over the clutch, which is a multiple disk affair running in oil and receiving its lubrication from the crankcase. The entire rear end of the gearcase, in which the rear bearings of the gear shafts are mounted, is removable, being bolted up to the casing proper. Despite its moderate dimensions, the gearcase covers all that is necessary to provide four changes of speed, the control being selective. The gear housing conveniently carries the gear lever, which is centrally positioned, and beside it the emergency brake lever, and both clutch and service brake pedals are journalled on the left side just back of the flywheel section of the housing. The car obviously is driven from the left side.

Unit Power Plant in Sub-Frame.

While the Chalmers power plant is not carried on a three-point suspension in the same way that the units already described are carried, the same end, protection from twists and abnormal stresses, is attained by a different method. A heavy flange or web is cast along the entire length of the crankcase on either side, and to the flanges, which are machined straight and true, the



CHALMERS HOUSING

side members of a sub-frame are bolted. Four arms project over the top of the frame and take their share of the weight of the power plant. The sub-frame, in turn, is bolted to the car framing. The crankcase, with its stiffening webs, and the side mem-

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bers of the sub-frame, make up a combination that is absolutely rigid, and the gearcase, not being attached at any point to the framing, cannot be twisted or distorted.

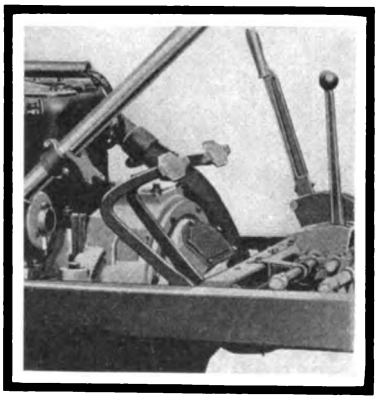
Covering Clutch and Flywheel.

While a great many makers consider it desirable to keep the motor and gearset as close together as possible, and bring about the desired end by assembling them into a unit power plant, there are others who for various good reasons prefer to maintain the separation of the two components, but who, nevertheless, make use of at least part of the idea embodied in the unit power plant system by enclosing the flywheel and the clutch in a casing that is practically one with the crankcase. Such an arrangement is adopted by the Packard Motor Car Co., of Detroit, which places the gearset on the rear axle, and the way in which it is carried out in the "38," which is a six-cylinder motor, is shown in one of the accompanying illustrations. The upper part of the flywheel housing is cast integral with the upper half of the crankcase, while the lower half is cast with the lower crankcase section. The rear edges of the two half-castings form flanges to which is bolted the rear section of the casing which encloses the clutch. The clutch is of the multiple disk type and runs dry. Still another, and a smaller, section is bolted to the rear end of the clutch casing, and in this is housed the universal joint. Over the clutch is the usual inspection plate—a little unusually ample, perhaps—and the clutch casing affords a convenient support for the pedals operating the service brake, the clutch and the accelerator.

Front Suspension by Cross Yoke.

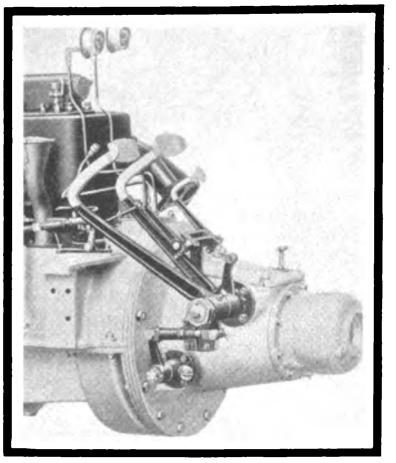
The method of applying the three-point suspension principle to the Packard motor is a good deal out of the ordinary. Two of the points are at the rear of the motor, just where the crankcase merges into the flywheel casing, and are formed by two arms of more or less conventional type. The third point is at the front of the motor, of course. A steel cross member, of I-beam cross-section, heaviest at the middle and tapered toward the ends, which are formed into "palms" to bolt to the side frames, is secured at its center to the motor just above ward of the front cylinder and just above the crankcase. The arrangement is a neat one, and as for its effectiveness, it hardly is necessary to say more than that it is a Packard feature.

In the case of the Marion car, built by the Marion Motor Car Co., of Indianapolis, Ind., the separation of the motor and the gearset are maintained for exactly the same reason as in the Packard—that is, the gearset is mounted as a unit with the rear axle and forms a conspicuous feature of the chassis design. The flywheel and clutch are enclosed with the motor, and though the general idea is carried out along about the same lines, there are differences that the illustration brings out clearly. The universal joint is not enclosed with the clutch, the casing terminating at the clutch-shaft bearing. There are two inspection plates on the



MARION MOTOR MOUNTING

extension housing of the Marion, one being directly over the flywheel, to permit the insertion of a tool for adjusting the rear main bearing, and the other over the clutch in the sloping face of the casing. The motor is carried on a three-point suspension, two of the points being arms cast on the rear end of the casing and the third secured to a steel



PACKARD UNIT CONSTRUCTION

yoke crossing the frame at the front of the motor.

There are so many unit power plants built and so many variations in matters of more or less important detail, that it is obviously impossible to describe all of them, or even to describe all of the more important examples. In the foregoing, however, there is sufficient variety to convey some idea of the trends and tendencies in the construction of this popular form of power plant and to indicate why it is preferred in so many cases.

Rolling Gears from Red Hot Blanks.

Making gears by a process that recently has been developed and still is in its early stages consists in rolling the teeth into shape from a blank which is put into the forming machine while hot. The blank is of smaller diameter than the finished gear, and the rolling die, which is merely a gear with accurately cut teeth, forces up the teeth from the blank and at the same time forms the spaces between, the steel forced out of the spaces rising to form the projecting teeth. The machine is a massive one and requires 30 horsepower to drive it. Gears can be turned out in a very short time—a matter of seconds only, once the blank has been placed in position—and not only is there an economy of time in the process, but there is no waste of material by cutting, as in the usual method of making gears.

As to the accuracy of the process, it is said that a rolled steel gear is within two or three thousandths of an inch of absolute accuracy in pitch and diameter. For much work, such as agricultural machinery, the gears can be used just as they come from the machine; the teeth have a smooth finish due to the fact that toward the end of the rolling process they are sprayed with oil in a cold air blast. For automobile service, where it is necessary to eliminate all the inaccuracy that is humanly possible, a light finishing cut can be taken of the finish made by grinding, the gear being rolled a trifle oversize for the purpose.

The new gears are said to be superior to cut gears in the matter of strength, because the grain of the steel follows the tooth outlines. The kneading process in the rolls also is beneficial to the metal. A further claim is that there is considerably less tendency to warp than with cut gears, due to the better grain and fiber formation. An increase of strength of 22 per cent. is claimed for the rolled gears before casehardening and of 10 per cent. after the casehardening.

While it is only recently that the rolling process for making gears has come into much prominence, work has been in progress since 1909 in an experimental way, and there naturally were many obstacles and difficulties to overcome. By making the forming gears or dies of large diameter it has been found that there is no tendency to overheat, while the spraying process mentioned eliminates the tendency of the die teeth to stick to the gear being rolled. These and many other problems caused trouble at first, but they have been overcome and the process rendered practical.

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1,059,216. Driving Mechanism for Motor Vehicles. John David Rowland, Birmingham, England. Filed Sept. 17, 1912. Serial No. 720,727. (Transmission system with expansible pullies.) 4 claims.

1,059,220. Automobile Body. Frank Saxon, Houston Heights, Tex. Filed Feb. 20, 1912. Serial No. 678,759. (Seats with backs to be lowered to horizontal position.) 4 claims.

1,059,222. Air Pump. Charles Mack Scott, San Angelo, Tex. Filed July 19, 1911. Serial No. 639,325. (Air pump mounted on and driven by road wheel.) 3 claims.

1,059,317. Controlling Device for Internal Combustion Engines. Edward P. Robinson, Malden, Mass., assignor to Reversible Gas Engine Company, a corporation of Maine. Filed Mar. 9, 1908. Serial No. 420,000. (Throttle device for intake pipes.) 3 claims.

1,059,967. Steam-Supplied Carburetter. Harry A. Babbitt, Little Rock, Ark., assignor to Modern Gin and Compress Co., Little Rock, Ark., a corporaion of Arkansas. Filed Aug. 11, 1911. Serial Not. 643,501. (Steam from radiator piped to carburetter.) 12 claims.

1,060,017. Shock-Absorber. Max Cyrus Overman, New York, N. Y. Filed Sept. 26, 1912. Serial No. 722,405. (Linkage for shock-absorber connections.) 6 claims.

1,060,024. Changeable-Speed Transmission Mechanism. Gomer W. Price, Oakland, Cal. Filed Feb. 19, 1910, Serial No. 644,772. Renewed Nov. 21, 1912. Serial No. 732,744. (Constantly meshed bevel gears with individual clutch control.) 5 claims.

1,060,039. Internal-Progressive-Combustion Rotary Motor. James Wallace Tygard, New York, N. Y., assignor of one-third to Henry A. Wise Wood, New York, N. Y., and two-thirds to The Tygard Engine, a corporation of New Jersey. Filed Feb. 26, 1901. Serial No. 48,935. (Rotary engine with two double-faced pistons in annular casing.) 43 claims.

1,060,042. Vaporizer for Internal-Combustion Engines. Nathaniel B. Wales, Boston, Mass. Filed Dec. 28, 1912. Serial No. 739,004. (Vaporizer with exhaust heating coil and electric heater.) 3 claims.

1,060,070. Internal-Combustion Engine. Robert Esnault-Pelterie, Boulogne, France. Filed May 2, 1907. Serial No. 371,519. (Cylinder arrangement in radial cylinder motor.) 7 claims.

1,060,073. Power-Transmitter. Albert Fono, Budapest, Austria-Hungary. Filed Jan. 18, 1912. Serial No. 671,947. (Friction transmission device.) 2 claims.

1,060,080. Vehicle Tire. Thomas L. Gunning, Chicago, Ill. Filed Aug. 8, 1912. Serial No. 713,966. (Solid tire with sing-ring fastening device.) 1 claim.

1,060,109. Pump. John J. McIntyre, Hartford, Conn. Filed Nov. 7, 1911. Serial No. 658,967. (Spark plug type of air pump designed for permanent attachment.) 2 claims.

1,060,121. Taximeter. Truman W. Post, New York, N. Y., assignor to Post Lock Register Co., a corporation of New York. Filed Feb. 25, 1910. Serial No. 545,820. (Taximeter with automatic check printer.) 10 claims.

1,060,146. Spring Wheel. William T. Urie, Independence, Mo. Filed Aug. 19, 1912. Serial No. 715,860. (Wheel with crossed curved spring spokes.) 1 claim.

1,060,147. Spring Wheel. U. Grant Weidman, Indianapolis, Ind. Filed May 16, 1912. Serial No. 697,754. (Curved springs between inner and outer rims.) 3 claims.

1,060,151. Injecting Device for Diesel Motors. Emil Bader, Nuremberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg A. G., Nuremberg, Germany. Filed Dec. 12, 1911. Serial No. 665,340. (Spring-actuated fuel injection pump.) 4 claims.

1,060,152. Reversible Four-Cycle Gasolene Engine. Arthur B. Baker, East Orange, N. J. Filed April 26, 1911. Serial No. 623,396. (Interconnected valves producing reverse action.) 6 claims.

1,060,175. Steering Gear. Allen H. Fetzer, Galion, Ohio. Filed Jan. 21, 1910. Serial No. 539,325. (Double worm and nut gear.) 1 claim.

1,060,187. Windshield for Automobile Radiators. August Hormel, New York, N. Y. Filed Feb. 12, 1912. Serial No. 676,969. (Radiator shield with fan-like folding blades.) 6 claims.

1,060,192. Method of Driving Gas Motors Using Liquid Fuel. Hendrikus Bernardus Krythe, Geovorden, Netherlands. Filed April 1, 1909. Serial No. 487,184. (Liquid fuel injection system.) 1 claim.

1,060,195. Tire. Andrew William Livingston, Oakland, Cal., assignor to Standard Wheel and Tire Armor Co., Oakland, Cal., a corporation of Arizona. Filed Nov. 7, 1911. Serial No. 658,993. (Pneumatic tire with inner and outer air-containing portions separated by metal band.) 1 claim.

1,060,205. Dirigible Headlight. Fritz Muller, Cologne-Sulz, Germany. Filed Aug. 14, 1912. Serial No. 714,965. (Headlights moved by steering gear through piston-and-cylinder device.) 5 claims.

1,060,231. Ignition Device for Internal Combustion Engines. Harry Osborn Cram, Bridgeport, Conn., assignor to the Bridgeport Motor Co., Inc., Bridgeport Conn., a corporation of Connecticut. Filed Nov. 4, 1911. Serial No. 658,494. (Make-and-break ignition system.) 5 claims.

1,060,256. Vehicle Wheel. Lawrence Hoskins, Plainville, Ill. Filed Oct. 9, 1911. Serial No. 653,514. (Wheel with helical springs radially disposed.) 10 claims.

1,060,290. Vehicle Wheel-Rim. Edwin Coupland Shaw, Akron, Ohio, assignor, by mesne assignments, to The United Rim Co., Akron, Ohio, a corporation of Ohio. Filed June 14, 1907. Serial No. 379,028. (Locking device for quick detachable rims.) 9 claims.

1,060,301. Vehicle Tire. Edward Williamson, Chicago, Ill. Filed Jan. 23, 1912. Serial No. 672,850. (Tire core of continuously coiled spring.) 2 claims.

1,060,355. Starter for Internal-Combustion Engines. Luther V. Moulton, Grand Rapids, Mich. Filed June 6, 1908, Serial No. 437,133. Renewed Dec. 11, 1911. Serial No. 665,151. (Ignition starter controlling valve.) 21 claims.

1,060,395. Combination Fender and Bumper Device. James S. Yoast, Cincinnati, Ohio. Filed Dec. 18, 1911. Serial No. 666,370. (Spring buffer bars bracketed under car near middle of chassis.) 3 claims.

1,060,416. Motor Vehicle Drive Gear. Eugene Baker, Darlington, S. C. Filed Nov. 16, 1910. Serial No. 592,732. (Combined driving and steering wheel.) 3 claims.

1,060,420. Spring Wheel. Alphonse Bernier, Salem, Mass. Filed March 26, 1912. Serial No. 686,250. (Springs between inner and outer rims.) 1 claim.

1,060,475. Fender for Automobiles. Edward M. McGowan, Fond du Lac, Wis. Filed Oct. 22, 1912. Serial No. 727,226. (Fender plates carried in front of front wheels.) 1 claim.

1,060,480. Resilient Wheel. George D. Minnick, Riverton, Neb. Filed May 1, 1912. Serial No. 694,349. (Inner and outer rims separated by leaf springs and also having coil springs.) 1 claim.

1,060,486. Dirigible Headlight-Support. Clarence M. Oertel, Milwaukee, Wis. Filed March 19, 1912. Serial No. 684,685. (Headlight moved by steering gear.) 2 claims.

1,060,487. Ges Engine Starter. John J. O'Leary, Healdsburg, Cal. Filed Feb. 15, 1912. Serial No. 677,846. (Spring starter.) 5 claims.

1,060,505. Vehicle Wheel. Alfred Scott, Princeton, N. J., assignor of one-half to George Beddings, Princeton, N. J. Filed Nov. 20, 1911. Serial No. 661,251. (Rim fastening.) 3 claims.

1,060,528. Driving Mechanism. Hermann H. Bochmann, Holstein, Iowa. Original application filed Jan. 17, 1911, Serial No. 603,119. Divided and this application filed Feb. 7, 1912. Serial No. 676,082. (Driving system for agricultural tractor.) 5 claims.

1,060,537. Shock-Absorber. Cary W. Crawford, Los Angeles, Cal., assignor to Eureka Shock Absorber Co., Los Angeles, Cal., a corporation of California. Filed May 4, 1911. Serial No. 642,922. (Auxiliary-spring shock absorber.) 2 claims.

1,060,579. Bearing-Roller Retainer. Paul Bayer, Kenosha, Wis., assignor to The Thomas B. Jeffery Co., Kenosha, Wis., a corporation of Wisconsin. Filed Nov. 11, 1912. Serial No. 730,570. (Retainer for taper roller bearing.) 1 claim.

1,060,611. Automobile Safety Appliance. Richard A. Magill, Atlanta, Ga. Filed May 31, 1911. Serial No. 630,532. (Buffer device that disengages clutch and applies brakes.) 2 claims.

1,060,629. Explosive Engine and Valve Gear for Same. Ernest S. Reiland, St. Paul, Minn. Filed Oct. 30, 1912. Serial No. 728,701. (Rotary valve.) 1 claim.

1,060,684. Traction Device. John S. Hunter, Egeland, N. D. Filed March 25, 1912. Serial No. 686,186. (Link belt traction tread.) 7 claims.

1,060,701. Motor Vehicle. Charles J. Pembroke, Rochester, N. Y. Filed Oct. 6, 1909. Serial No. 521,318. (Hollow dashboard containing gasolene tank.) 4 claims.

1,060,714. Transmission of Power for Use in Vehicles. John C. Sherman, Brookline, Mass. Filed April 6, 1911. Serial No. 619,421. (Individual clutch change-speed gear system.) 1 claim.

1,060,768. Muffler. Ernest M. Kluck, Buffalo, N. Y., assignor of one-half to himself and one-half to Nicholas C. Newerf, Buffalo, N. Y. Filed Feb. 23, 1912. Serial No. 679,399. (Muffler attached to side of exhaust pipe.) 9 claims.

1,060,778. Spring for Vehicles. John A. McAnulty, Indianapolis, Ind. Filed July 27, 1911. Serial No. 640,801. (Triple combination of semi-elliptic springs.) 3 claims.

1,060,820. Starting Device for Explosion Engines. Howard E. Coffin, Detroit, Mich. Filed April 7, 1911 Serial No. 619,592. (Ignition starter control system.) 6 claims.

1,060,823. Spring Wheel. Michael H. Cruise, Hebron, Neb. Filed Oct. 31, 1911. Serial No. 657,741. (Coiled spring encircling rim of wheel.) 2 claims.

1,060,854. Pneumatic Wheel. Niels Peterson, Teton, Idaho. Filed Dec. 27, 1911. Serial No. 668,021. (Wheel with pneumatic cushion between hub and rim.) 4 claims.

1,060,860. Elastic Wheel. Albert Sauvert, Paris, France. Filed April 25, 1912. Serial No. 693,187. (Wheel cushioned by air-cylinders and pistons.) 4 claims.

1,060,865. Combined Friction and Spur Gearing. August Sundh, Hastings-on-Hudson, N. Y. Filed Nov. 16, 1911. Serial No. 660,626. (Combination of friction rollers and planetary gearing.) 13 claims.

1,060,871. Ignition-Timing Device for Magnetos. Dennis M. Wilson, Muncie, Ind., assignor of one-half to Frederick S. Saunders, Muncie, Ind. Filed April 21, 1911. Serial No. 622,558. (Helical groove magneto timing device.) 1 claim.

1,060,879. Spring Structure. William E. Andrew, Atlantic Highlands, N. J. Filed Feb. 21, 1912. Serial No. 679,193. (Triple combination of semi-elliptic springs.) 22 claims.

1,060,882. Governor for Explosive-Engines. Robert B. Ballard, Fort Dodge, Iowa. Filed Sept. 13, 1911. Serial No. 649,172. (Centrifugal governor for two-cycle motors.) 6 claims.

1,060,925. Silencer for Gas-Engines, etc. Hiram Percy Maxim, Hartford, Conn. Filed Nov. 25, 1912. Serial No. 733,334. (Maxim's cylindro-spiral silencer.) 21 claims.

1,060,933. Worm-Gearing. Charles H. Myers, Buffalo, N. Y. Filed March 1, 1912. Serial No. 680,798. (Worm-wheel with teeth formed of balls.) 3 claims.

1,060,971. Windshield for Vehicles. George J. Capewell, Jr., Hartford, Conn. Filed Oct. 3, 1910. Serial No. 584,975. (Windshield with ventilating device at bottom.) 1 claim.

1,061,025. Rotary Combustion Engine. Cornelius H. Tangeman, New York, N. Y. Filed March 10, 1910. Serial No. 548,475. (Revolving cylinder motor with cylinders and crankshaft revolving in the same direction at different speeds.) 6 claims.

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What is the biggest mistake dealers make?

We asked this of several experienced dealers and traveling representatives for the *National* cars. We, of course, received various answers—but here is one mistake many agreed upon—

"They make promises they can't keep"

And it is explained that too often the dealer is absolutely sincere and believes he can make good on the promises he gives a customer for the car he sells him.

We have eliminated this mistake absolutely for you when selling *National* cars. In the first place the plain unvarnished truth about the *National* would be a gross exaggeration if applied to other cars. Often we find people who smile when we tell them the truth about the *National's* value. They smile until you prove it—then they do actually smile the smile that brings both a sale and a satisfied customer this year and years hereafter because the *National* is good year after year, steady, consistent, and always at the top in service, power, speed, beauty and most modern equipment.

The *National* dealer does not have to make promises he can't keep in order to force a sale. The *National* dealer promises more than other dealers and keeps his promise because the fulfillment of all the promises he makes is actually in the car he sells.

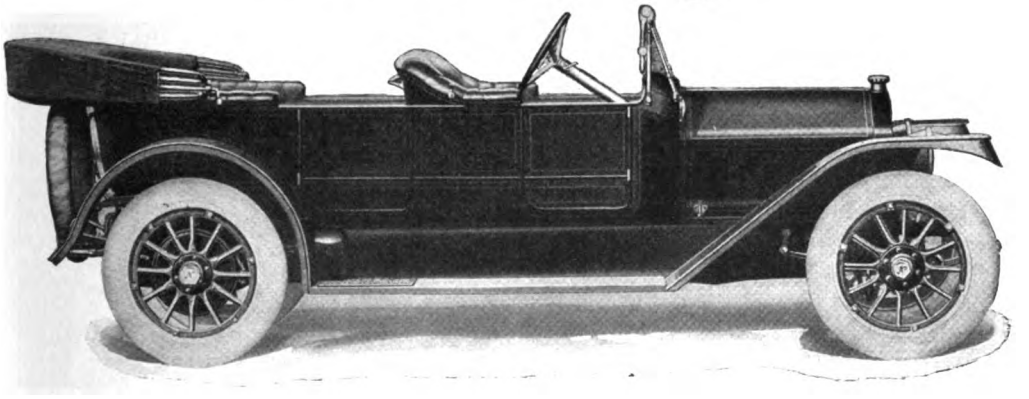
We put it in these cars in our thirteen-year-old factory. The *National's* success in contests—which makes it today the Stock Champion and International 500-mile race record holder—is one proof of the superiority of these cars.

If you are fortunate enough to be in open *National* territory please advise us at once. It will cost you nothing to learn more about our cars and the square and liberal manner in which we co-operate with dealers.

Holds World's Stock Championship

National

Holds World's Record for Fastest 500 Miles in Competition



Five models, $2750 to $3400

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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NEW DEPARTURE BALL BEARINGS

American-Made for American Trade



The Proof of the Bearing Is In Its Service

The garage man knows better than anybody the comparative service merit of the bearings installed in motor cars he cares for and repairs.

We recently sent out letters to garage men throughout the country, asking them their opinion of New Departure Ball Bearings, based on their experience with it.

The complete summary of all responses received the first week shows that 96 per cent. of the garage men who have been using New Departures found them absolutely satisfactory. Many of them went as far as to say that it has proved superior to all others.

This remarkable evidence of the quality and efficiency of New Departure Ball Bearings is absolutely indisputable. Users of foreign-made ball bearings, whether garage men or manufacturers, should give this American-made bearing a thorough trial.

Every manufacturer, purchasing agent, superintendent, and designing engineer should have the Engineering Edition of the New Departure Ball Bearing Catalog and the brochure on "Bearing Friction and Its Elimination."

Every garage proprietor and superintendent should have the new Ball Bearing Garage Manual, now in its third edition. Either one, or all of these books, will be sent free on request. Drop us a line now.

THE NEW DEPARTURE MFG. COMPANY

BRISTOL, CONNECTICUT

Western Branch: 1016-17 Ford Building, Detroit

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Into the Discard

Goes the Last of the Hand Levers

We now have the Electric Automatic Gear Shifter operated by the

GLBA

Storage Battery

in connection with the Electric Self Cranker and the Electric Lighting Generator

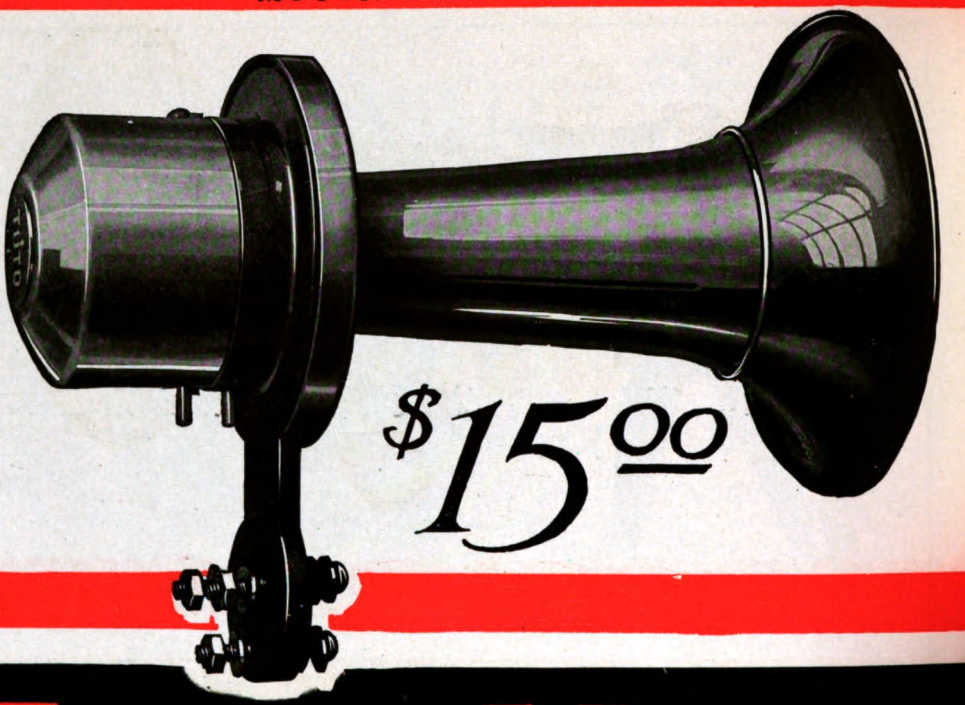
Write us for full information

Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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$15.00

TUTO HORN

TUTO HORN—the ideal warning signal for any type of car and the only electric signal delivering TWO separate and distinct warning notes—both tones secured by operating the same push button.

FOR ORDINARY SIGNALING, slight pressure on button produces a warning note amply adequate nine times in ten. For emergency signaling, where instantaneous action is required, press push button way down—the tone secured is that harsh, sonorous, abrupt demand that all motorists and pedestrians recognize.

THE FUNCTIONS OF A true warning signal are to give adequate warning of danger—always. Our TWO-TONE arrangement is accepted by sane motorists just as different sets of gears are used for speed and hill climbing. They change gears to meet road conditions—TUTO owners signal intelligently and can always meet conditions ahead.

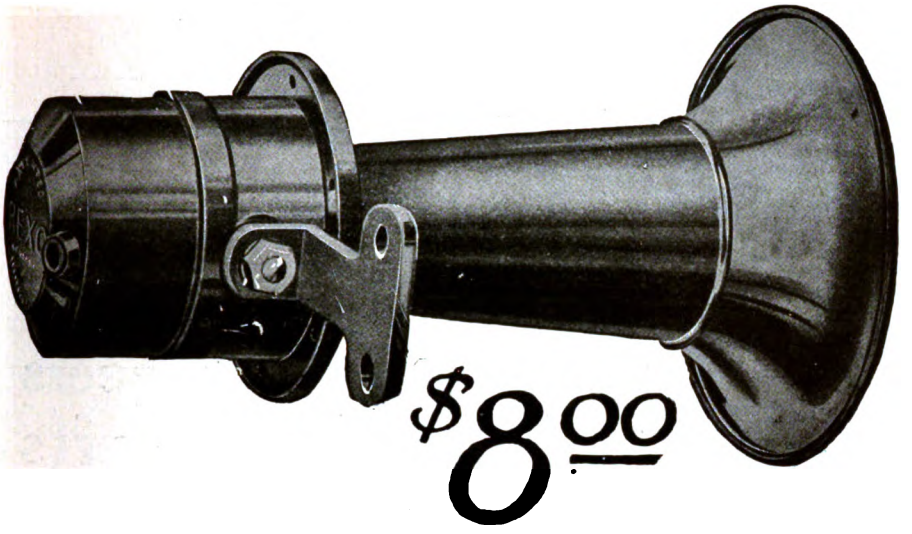
OUR CO-OPERATIVE DEALERS' selling campaign is under way—automobile owners everywhere will get the TUTO, REXO, MAXO story.

ARE YOU PREPARED to make Elyria-Dean deliveries? Send for our selling arrangement today—now.

THE DEAN ELECTRIC COMPANY

Kansas City, Mo. **501 Olive Street, ELYRIA, OHIO** San Francisco, Cal.

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REXO HORN

DEALERS

THESE WARNING SIGNALS WILL SELL THEMSELVES—WE CAN PROVE IT

THREE ESSENTIAL SELLING ARGUMENTS:

FIRST: Quality and Volume of warning note
SECOND: Workmanship, Design, PRICE
THIRD: Builders' Reputation, Guarantee

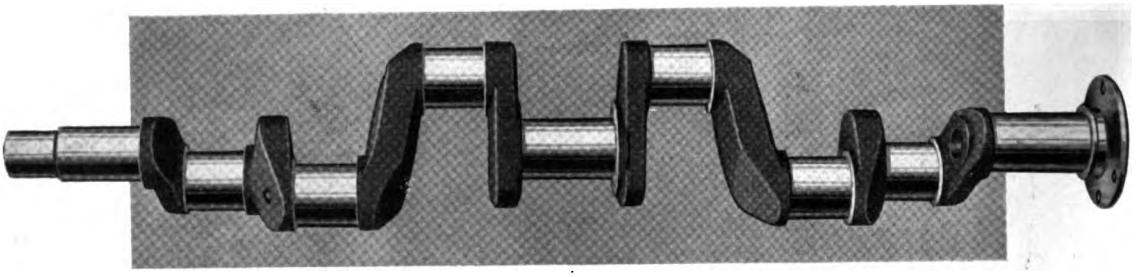
ALL ARE EMBODIED IN THE ELYRIA-DEAN LEADERS

TUTO HORN, *$15.00* **REXO HORN, *$8.00***

THE DEAN ELECTRIC COMPANY

Kansas City, Mo. **501 Olive Street, ELYRIA, OHIO** San Francisco, Cal.

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We Are One of the Pioneers in Machining Crankshafts

—been machining crankshafts exclusively for years. Our plant is second to none in the completeness of its equipment. Every machine is up-to-date and the best that money can buy.

But machinery and plant are things that money can buy in the open market. They can be duplicated. Therefore we claim no special merit for ours except that they are the best.

The feature that makes MICHIGAN CRANKSHAFTS better, finer, more accurate, and saves time, money and patience on the part of the engine builder or car manufacturer is the skill and experience that comes from specializing on one particular job for many years.

You get better SERVICE all the way through when you deal with us——

Because of concentration and longer experience.

Because we limit our capacity—don't crowd—never take more business than we can handle.

Because of completer equipment—result of specializing on one thing.

Because we make deliveries when promised. And——

Because closer inspection at our plant assures fewer rejections from you. Last year we had **less than two per cent. rejects.**

We are after your business. You will like our way of handling it. Better not wait too long before sending your blue-prints.

MICHIGAN CRANK SHAFT CO.
LANSING, MICH.

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Continental Security



At the present time it will be found more than worth the while of every manufacturer of motor vehicles to study the following resources of the Continental Motor Mfg. Co.:

The highest commercial rating of any motor concern.

Two immense factories and machinery valued at over $2,000,000.

Ten years of constant, progressive, and profitable manufacture.

Practically the same original organization.

80,000 motors in successful, daily service.

Contracts with over 60 motor vehicle manufacturers—many of them with world wide reputation.

You would not do business with a bank unless you had carefully looked into its standing and financial condition. Otherwise you would hardly deserve to weather the first period of depression that came along. Scrutinize too the reliability of your source of manufacturing supplies. It is equally important.

Continental security—as indicated by the above facts—assures the manufacturer prompt deliveries AT ALL TIMES; assures repair parts for car owners at any future date; and assures uniform quality at a uniform price.

There is nothing of the fine art of rhetoric in this advertisement, but we believe every manufacturer will welcome the candid statement of a company that not only makes America's Standard motor, but also can back up to the limit its motto "Powerful as the Nation."

CONTINENTAL MOTOR MFG. CO.

DETROIT, MICHIGAN

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Stewart Speedometer

MAGNETIC PRINCIPLE

English Authority Praises Magnetic Speedometer

In writing about it to "The Autocar," he says:

"I have nothing but unstinted praise for it. It is as near perfection as anything I have known. I have subjected it to the most searching tests with a stop-watch over a measured distance, and it has been found to be dead accurate at all parts of the scale. The indicating hand is always as steady as a rock, and as the dial is large and clearly marked, it can be easily read. The trip and total mileage recorders are also perfectly accurate."

By performances such as this, the magnetic principle has established itself in the minds of critical users as the only correct principle on which to make speedometers.

By giving satisfaction such as this—not just at first, bu during the life of several cars—the magnetic Stewart Speedometer has won its way to use on *more than a million automobiles and motorcycles.*

Insist—and the Stewart will be furnished on the car *you* are about to buy.

The Stewart Speedometer Factory

STEWART-WARNER SPEEDOMETER CORPORATION

1949 Diversey Boulevard, Chicago, U. S. A.

The world's largest manufacturers of speedometers for automobiles, motorcycles, motor boats, cream separators and commercial vehicles

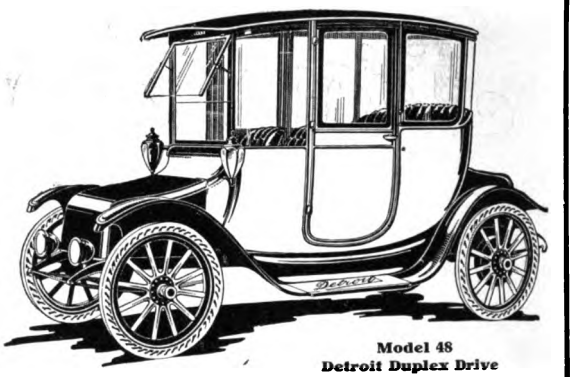
The most popular Speedometer in the World

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THE Detroit ELECTRIC

WITH BEVEL GEAR AXLE		WITH WORM GEAR AXLE	
Victoria	$2300	Gentleman's Roadster	$2500
4-pass. Brougham Rear Seat Drive	2550	4-pass. Brougham Rear Seat Drive	2850
5-pass. Brougham Front Seat Drive	2800	5-pass. Brougham Detroit Duplex Drive	3000

(Prices f. o. b. Detroit)



Model 48
Detroit Duplex Drive

The Electric Automobile Business Offers Big Possibilities

Detroit Electric dealers, as a class, are prosperous. Last year their aggregate sales were double those of the dealers of any other manufacturer of electric pleasure vehicles. For 1914 we are planning a still greater manufacturing and selling campaign. The **all**-electric automobile is gaining favor with the public rapidly.

It is an all-the-year-around seller. It is adapted to both winter and summer use. It is the logical car for city and adjacent country driving. About 80% of our owners use it as the **family car.** Not over 10% are driven by women exclusively.

Now is the time to get into the electric car business. We have a **few** good opportunities open. That they will soon be gone is apparent without any argument on our part. A Detroit Electric agency is an asset worth real effort. In most cases Detroit Electric dealers are the representative automobile men in the community. We want this type of men permanently identified with us in every city throughout the United States. We will do our part to make the connection mutually pleasant and profitable.

Our entire organization is progressive. Our manufacturing methods are the most modern. And remember, we manufacture—not merely assemble. We employ experts in every department of our business. With the largest number of experienced men, making the highest type of car in the largest numbers, it is no wonder that we not only know the business from every angle, but are the acknowledged leaders in the electric automobile industry.

Our sales policy appeals to the progressive automobile dealer who wants to make money. We are in position to give our dealers sales help that it is impossible to secure elsewhere. Our experience, drawn from years of sales work in every part of the country, enables us to start our dealers right and advise them on any question that may arise.

One of our men, in a city of half a million, does $60,000 a year garage business, irrespective of new car sales, new battery sales and repair business, which amounts to very much more. The electric automobile business as we conduct it, is a **real** business.

We shall be glad to hear from gas car dealers or electric dealers handling other lines.

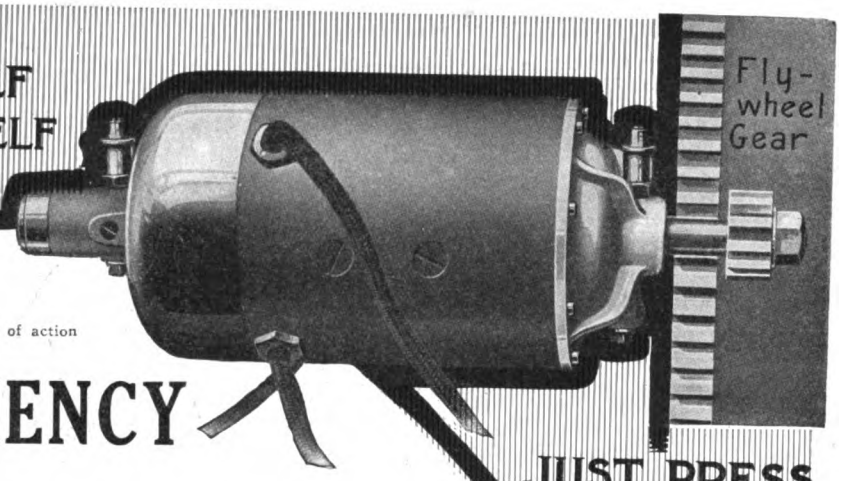
Anderson Electric Car Company, Detroit, U.S.A.

Builders of the "Detroit Electric"

Largest manufacturers of electric pleasure vehicles in the world

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MESHES ITSELF
UNMESHES ITSELF



Model B
Rushmore Starter out of action

EFFICIENCY

JUST PRESS
A BUTTON

It is common to treat the efficiency of an electric engine starter as a minor matter—merely the difference of a few cents, more or less, spent for current.

But it is nearer right to say that *its efficiency goes to the very root of a starter's performance.* This is because the permissible size and weight of the storage battery and therefore its permissible current output, are limited.

If one starter taking 100 amperes at 5.5 volts has an efficiency of 50%, while another taking the same current and voltage has 75% efficiency, the latter will spin the engine *half again as fast* as the former.

If the slower starter spins an engine just fast enough to give a comfortable start on the battery, the faster starter will snap the engine off on the magneto.

If the weather is cold, the slower starter may not suck air through the carburetor fast enough to make a mixture. Or, if the carburetor is flooded by hand in order to start, the engine may still be too cold to evaporate the gasoline. In that case no explosion can occur till the cylinders have been warmed up by repeated compressions sufficiently to vaporize the new gasoline that enters them. Under such conditions the less efficient starter will have to run the engine much longer, and hence will use considerably more current, to produce a less satisfactory result.

The RUSHMORE STARTER

delivers at the flywheel from 72 to 75% of the energy received from the storage battery. It is the only geared starter designed to operate at a speed so low that no intermediate gears are required between it and the flywheel. It is guaranteed, for equal current in each case, to spin any engine from 40 to 50 per cent. faster than any other starter on the market. As compared with most other starters, it affords a marked saving in the total weight of battery, starter, and gearing.

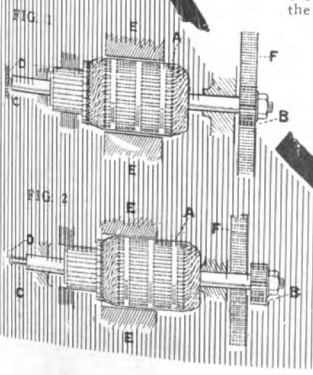


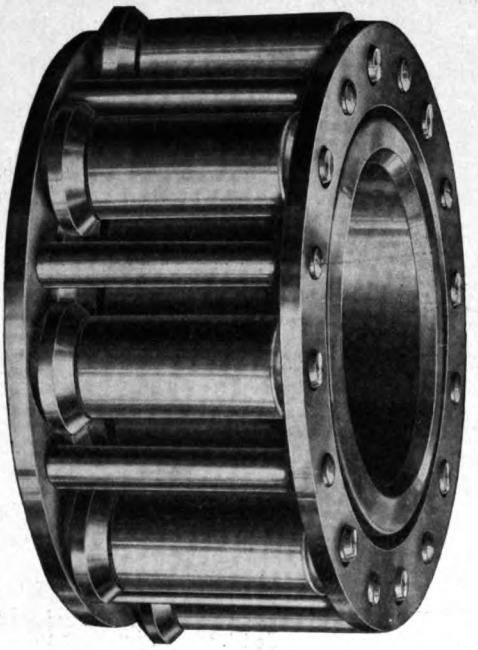
Fig. 1. The Starter in action. Pressing the switch button causes the poles E. E. to attract the armature A to the left, thus engaging the pinion with the flywheel gear.

Fig. 2. After the engine starts. The increase in speed, when the load is removed, kills the battery current for an instant, allowing the spring C to slip the pinion B out of mesh.

Rushmore Dynamo Works,
Plainfield, N. J.

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"BOWER SAVES POWER"



How Bower Saves Power!

The Bower Bearing has a cylindrical roller with a flanged head at one end. The flange takes care of end thrust, the roller of radial load. This simple division of labor gives two extraordinary advantages to Bower Bearings: (1) it reduces friction to a minimum and (2) it obviates the need of any adjustment. Moreover, the raceways and the rollers being at all times parallel, the rollers are self-aligning. Thus a maximum diameter of rollers can be used; their speed of rotation is comparatively low; wear is minimized, and long life is assured to the bearing.

BOWER ROLLER BEARING CO.

DETROIT, MICHIGAN

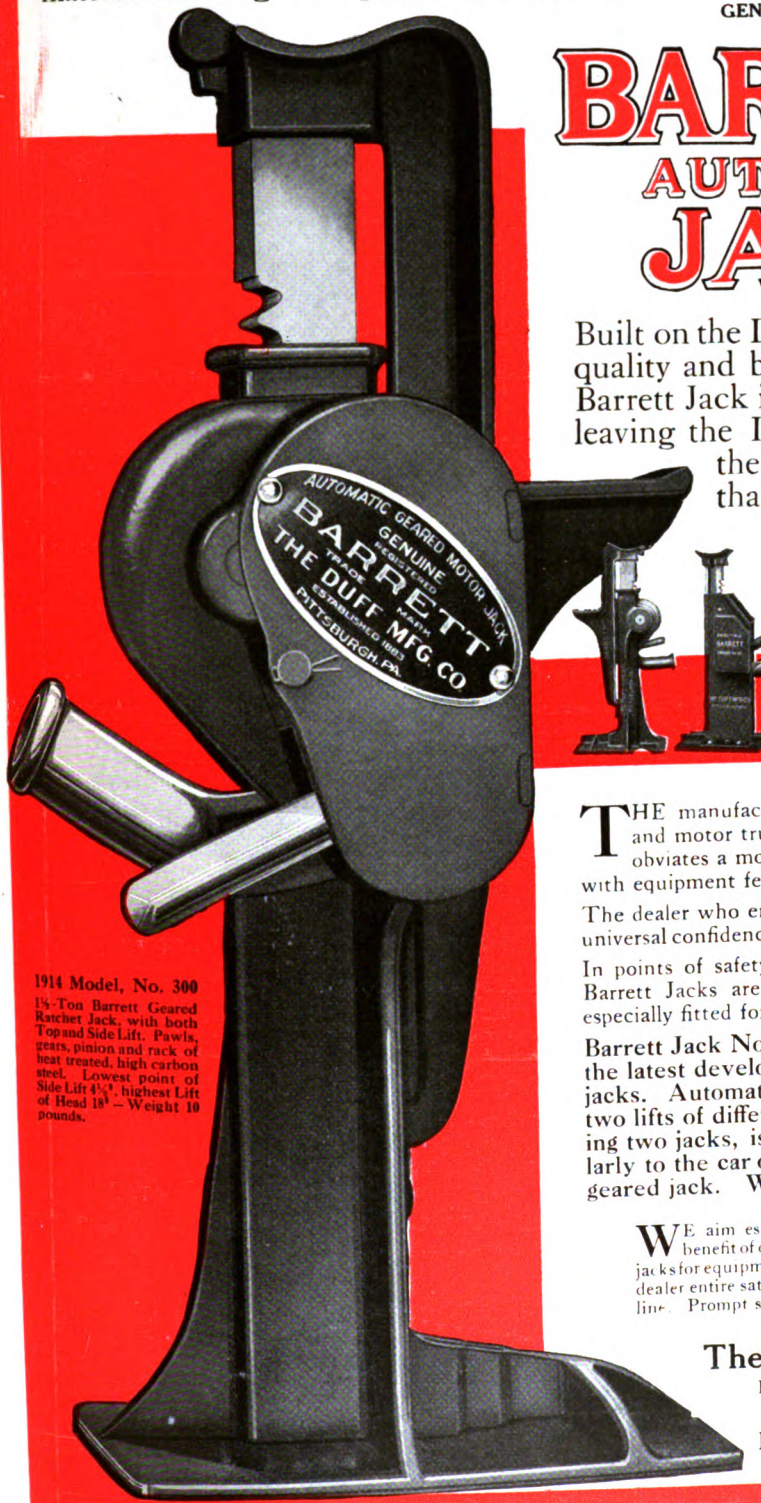
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EVERY manufacturer of automobiles and every dealer in automobile accessories, should give most careful consideration to the material advantage of equipping and selling

GENUINE DUFF-BUILT

BARRETT AUTOMOBILE JACKS

Built on the Duff principle of highest quality and best workmanship, every Barrett Jack is carefully tested before leaving the Duff plant to withstand the most severe demands that may be made upon it.



1914 Model, No. 300
1½-Ton Barrett Geared Ratchet Jack, with both Top and Side Lift. Pawls, gears, pinion and rack of heat treated, high carbon steel. Lowest point of Side Lift 4¾", highest Lift of Head 18¾" — Weight 10 pounds.



THE manufacturer who equips his pleasure cars and motor trucks with Barrett Automobile Jacks obviates a most frequent source of dissatisfaction with equipment features.

The dealer who endorses Barrett Jacks benefits by the universal confidence that is accorded this standard line.

In points of safety, efficiency, service and durability, Barrett Jacks are without equal. There is a Jack especially fitted for every type of car or truck.

Barrett Jack No. 300 shown here is but one of the latest developments in the line of Duff-built jacks. Automatic, geared to raise 1½ tons. The two lifts of different heights, practically combining two jacks, is a feature that appeals particularly to the car owner—and is found on no other geared jack. Weighs but ten pounds.

WE aim especially to give car manufacturers the benefit of our experience in determining the right jacks for equipment, and our sales policy guarantees the dealer entire satisfaction in his handling of the Barrett line. Prompt service on all price and other inquiries.

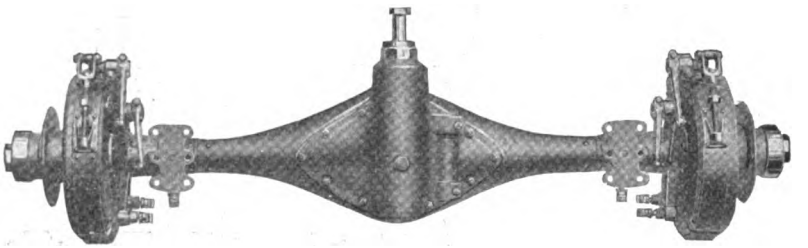
The Duff Mfg. Company
PITTSBURGH, PENNSYLVANIA
Established 1883

New York Office, 50 Church St.

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"American" Axles

An Ideal Mounting for That Form of Worm Drive Which Has Been Universally Accorded First Place



In every field of industry there is one acknowledged leader, by which all others of its type are judged.

The Lanchester-Daimler Worm Drive holds this enviable position among gears of its class, because its superior efficiency is not a mere claim, but the verdict of expert engineers, based upon exhaustive practical tests covering many years of service.

Since we secured the sole American rights as axle manufacturers to this gear—some two years ago—we have actually added to the wonderful efficiency which it displayed abroad, through the perfection of mounting which "American" Axles have given it.

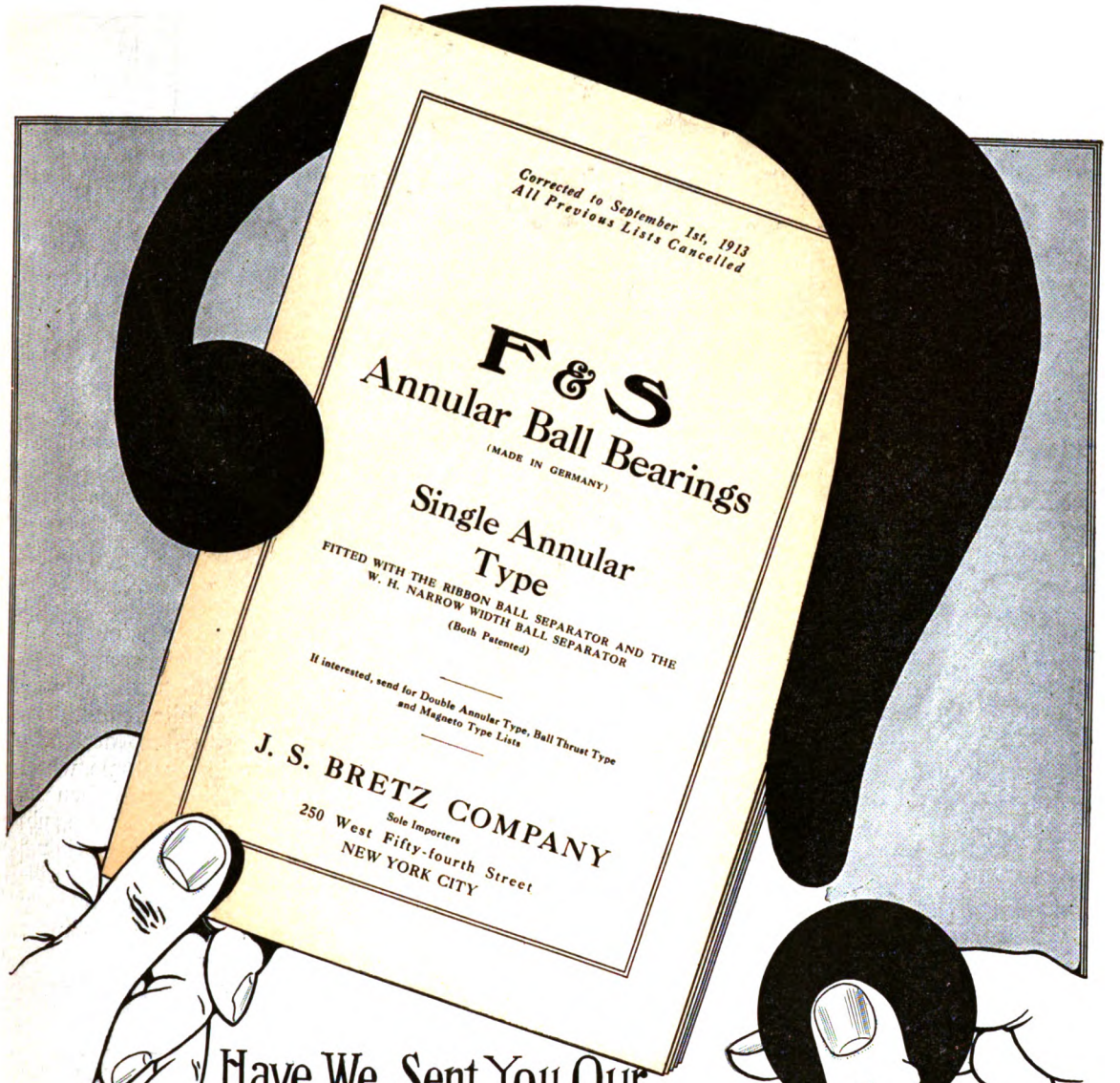
By offering manufacturers of high grade gasoline or electric pleasure cars the option of the Lanchester-Daimler Worm Drive, or our own Bevel Drive Axle, we doubled our opportunity for service just when the worm drive became the most important subject connected with automobile construction.

The Lanchester-Daimler Worm Drive, mounted in a full-floating "American" Axle and fitted throughout with the finest of foreign made ball-bearings is, therefore, a unit whose every part has been conclusively tested, and which in its complete form is, we believe, the best axle of its class in the world.

The adjusting and full-floating features of "American" Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Have We Sent You Our NEW SINGLE ANNULAR LIST—

if not, a request will bring it FREE !!

NOTE.—The illustration is a reduced photographic reproduction in color of the cover of 1913 F. & S. Annular Ball Bearing list of the Single Annular Type. The original, issued September 1st, is of 8-page magazine size, printed on 100 lb. India tinted coated paper, with wood cut illustrations.

The valuable and handy tables in the pamphlet give the trade number of the bearings, their bore, outer diameter, width, number and size of balls, increased load capacity in pounds at various R. P. M., together with the new list prices on the conventional type and self-aligning type.

F & S Ball Bearings

J. S. BRETZ COMPANY
Sole Importers.
250 West Fifty-fourth, New York

Please send list to

Name

Address

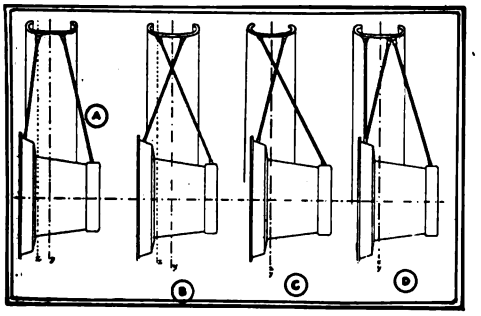
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CORRECT WIRE

HOUK DETACHABLE

Triple Spoke Lacing

In considering the use of wire wheels remember emphatically that without triple spoke lacing and an absolutely positive automatic locking device all of the strong points of advantage we have been preaching in these columns for months and months fail absolutely to materialize.



Until our last announcement our campaign of advertising has been confined almost exclusively to discussion of the advantages of wire wheels over wooden wheels. These advantages are so generally known now and so generally accepted that it is our intention to emphasize, for a while at least, the absolute necessity of correct wire wheel design in order to assure the advantages they have shown wire wheels inherently to possess.



Referring to the sketch on this page illustrative of the developments of the triple spoke lacing as explained in exhaustive detail in our four page insert of October 2nd, attention is called again to the fact that in the illustrations A, B and C effort was made to produce a wire wheel with two sets of spokes which would possess the necessary carrying capacity both for radial and thrust loads. But this effort failed because it was impossible to maintain the proper center of tread—as accepted in wooden wheel construction—and at the same time obtain proper angularity of the spokes to resist thrusts from either side and to provide radial carrying capacity. In A not only is the center of the tread wrong but this method does not provide sufficient thrust capacity in either direction. In B and C, the spokes were crossed and offset in an effort to overcome the defects inherent in A without success. Repeated tests showed that while it might be possible to design a statically staple wheel after this manner that when the wheels thus designed were subjected to continued driving, radial load carrying and side thrusts, that a sacrifice of strength in one way or another is absolutely inevitable.

The failure of these methods finally resulted in the perfecting of the triple spoke lacing, as indicated in figure D. In this construction the spokes which are laced at an angle carry the side thrusts, while the circle of spokes which are laced at right angles to the driving line are relieved of all stress due to side thrust and, while carrying their proportion of the radial load, are designed especially to transmit the torsional strains of driving.

This admits of a maintenance of the tread just the same as in the wooden wheel and at the same time gives proper angularity to the thrust carrying spokes to enable the wheel as an assembled unit to possess practically fifteen times the thrust carrying capacity and practically five times the radial and driving capacity of the wooden wheel.

SAFETY *The wire wheel is safer than the wooden wheel. The wooden wheel possesses nothing like the factor of safety applied in every other part of the car. Accidents show that the most severe results have been due to the collapse of the wooden wheel, whether such collapse was the initial or the ultimate cause of these results. Being relatively so much stronger than wooden wheels, wire wheels are the most important protection both to the occupants of the car and to the car itself that can be applied to the modern vehicle. "Safety first."*

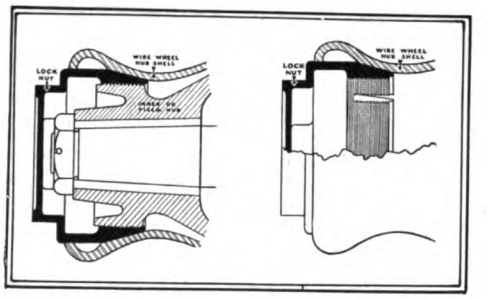
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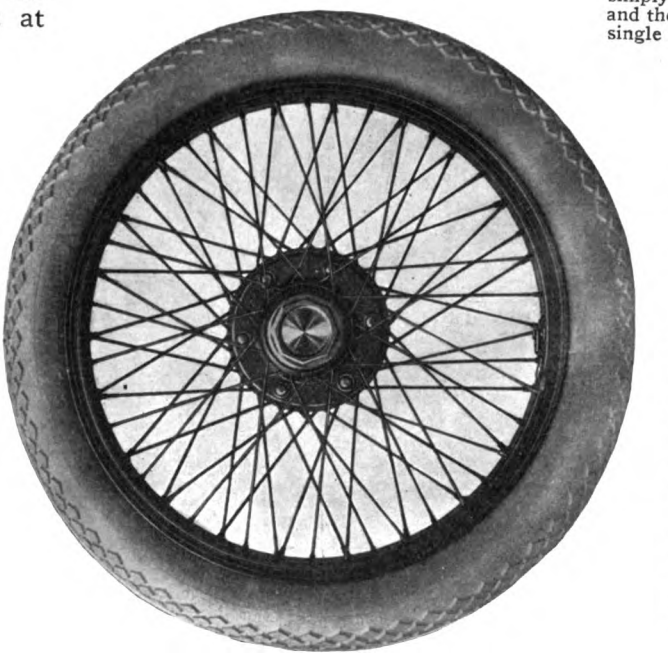
WHEEL DESIGN

WIRE WHEELS

Automatic Locking Device

Of equal importance with the proper spoke construction is the question of a positive and absolutely automatic locking device to enable a rapid, easy and certain means of detaching and attaching the wheel to the axle. The value of a detachable wheel because of its lightness in weight at the periphery is so clearly demonstrated, that advance practice of course calls for the discarding of demountable rims and the use of a wheel that is detachable at the hub. This, in turn, makes it absolutely necessary that the locking device must be positive, automatic and simple so as to render the change of wheels easy and quick. There must be no complication or so-called locking device or fixings that depend upon springs, pins or other extra parts which have to be fitted in position.





All such devices are not only complicated and trappy by nature but in the end they depend upon human agency and intelligence to see that they are properly fixed in place every time — and unfortunately under such conditions they very frequently are not properly fixed.

In the Houk Wheel all complicated locking means have been discarded in favor of a positive single piece clamp nut, which is completely automatic and self tightening whenever the car is in motion. As a consequence, by virtue of this maximum of simplicity, the automatic self-tightening and locking device on the Houk Wheel is positively fool proof no matter under what conditions used. In other words, the operation of attaching a Houk Wheel calls simply for slipping it into place and the plain screwing up of this single piece clamp nut. So positive is the operation of this device that even if the operator neglect to tighten this clamp nut the rolling motion of the car itself will finish the tightening process. The illustrations on this page show the application of the locking device to the Houk Wheel.

Reference to the 4-page insert in the October 2nd issue of Motor World will furnish you with the details and scientific facts which prove the perfection of this device.

So let us emphasize the fact again that to insure the comforts and advantages inherent in wire wheel usage care must be taken to specify only those wire wheels which possess these two important features — triple spoke lacing and a positive fool proof locking device.

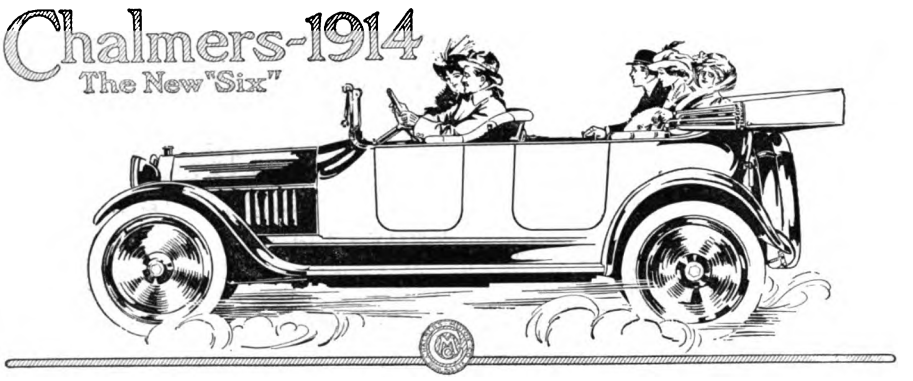
HOUK MANUFACTURING Co

BUFFALO, NEW YORK

Wire wheels mean a saving of more than 50 per cent. in your tire cost. When you can show a customer that his tire bills are cut almost in two, you interest him in the most important phase of car upkeep today. Then the further facts that wire wheels save the life of the car itself, as well as its fuel consumption---that wire wheels make an easier riding car and a car that is easier to handle, only serve to emphasize the statement that wire wheels are the greatest single sales asset the car of today can offer.

ECONOMY

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A New Car With a New Motor

Flexible as Steam
Silent as Electricity
Vibrationless as the Turbine

These three things, makers of gasoline motors have sought for years. Some have secured silence, but at the expense of power. Others have obtained smoothness at the cost of efficiency. A few have sought flexibility through supplementary gearing.

You get all three in the new "Six," without sacrifice of power—with no loss of efficiency—without aid of extra gearing.

The Flexibility of Steam

With the new "Six" you can do nearly everything on high gear. You can idle down to a tortoise crawl in a crowd and at the touch of the throttle be off like a thoroughbred without touching the gear lever.

And the motor does it all. The six cylinders draw gas equally from a superheated reservoir. The valves are bigger and open 40% wider than common. They can't hold back the gas as it rushes triple-heated from the carburetor.

This unchecked stream of power is responsive to the slightest touch of the throttle. It gives a flexibility equalled only by the steam engine.

The Smoothness of the Turbine

Vibration means the moving parts of your motor are over-weight or a trifle out of balance.

By using highest grade materials made in a new way, the pistons and connecting rods are made 40% lighter than common. They are balanced on a delicate scale.

The six cylinders of this master motor give a continuous push to the pistons. There's no interval between explosions.

This gives unequalled smoothness and economy. It gives a luxury of motion unsurpassed by the highest priced foreign cars. This is the result of a good six cylinder motor and cannot be obtained in any other way.

Silence that Saves

The noisy wedge-like cams still so widely used have been discarded; in this car big oval cams lift the valves and slide them shut without a sound. So even at high speed, the new "Six" runs with the silence of sailing.

But this silence has a deeper meaning than the bliss of quiet riding. It signifies no friction—no wear—no waste. It means renewal and upkeep costs cut almost to nothing. The new "Six" proves that luxury and economy can go together.

The Chalmers Standard Road Test

We invite you to ride in the new "Six." We want you to feel the ready response of its supple power—the luxury of motion—the charm of its beauty.

In that way only can you really know the merits of this car—the joy of its possession. The Chalmers Standard Road Test is for that purpose. It puts you under no obligation.

Roadster	$2175	Six Passenger.....	$2275
Four Passenger...	2175	Coupe	2850
Five Passenger....	2175	Limousine	3600

Fully equipped, f. o. b. Detroit

All bodies interchangeable. Five wire wheels $80 extra.

Chalmers Motor Company, Detroit

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Prest-O-Lite

"The reliable light"



The Real Facts On Lighting

with all the guesswork eliminated.

If you really want to KNOW which is the most reliable, the most economical, and the **most convenient** light—

Send for this book!

It does not merely claim that Prest-O-Lite is the light you want—it **PROVES** it.

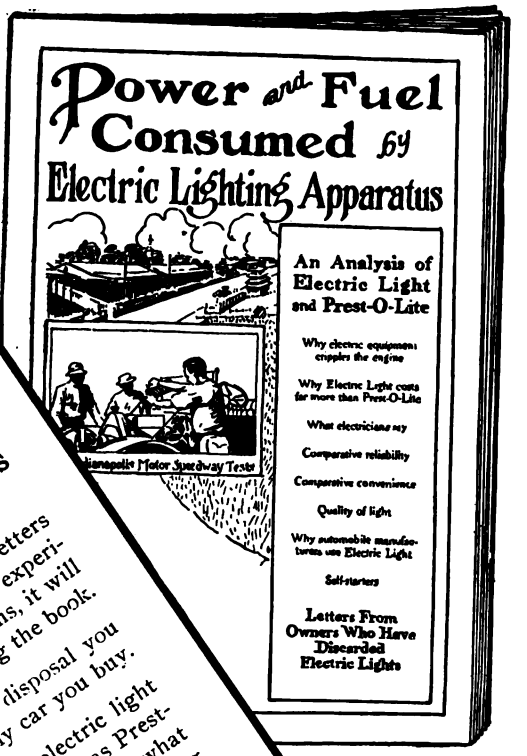
If you read nothing else but the letters from owners who have had their experience with electric lighting systems, it will more than repay you for getting the book.

With these facts at your disposal you can get greater value in any car you buy.

If you do not know why electric light costs at least five times as much as Prest-O-Lite, read this book and find out what experience has actually proved among automobile owners, electricians and electrical engineers.

These articles are not written to confuse you. On the other hand, they make the whole subject clear as daylight—easy to read and easy to understand.

This book does not theorize. It is a report of PLAIN FACTS.



Don't Delay

Already the first two hundred thousand edition is practically exhausted. The demand is exceeding every expectation. This fact, backed by the proof of the great, new Prest-O-Lite factory, with output increased four times and working to its full capacity, is an indication that the motorist appreciates reliable light. If you want to get the real truth about automobile lighting —use the coupon.

The Prest-O-Lite Co., Inc.

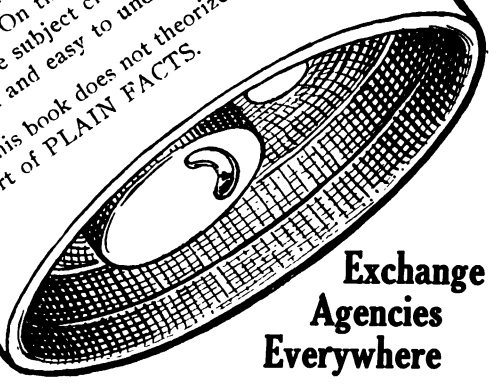
287 Speedway, Indianapolis, Ind.

(Contributor to Lincoln Highway)

Please send Report of the Speedway Tests to:

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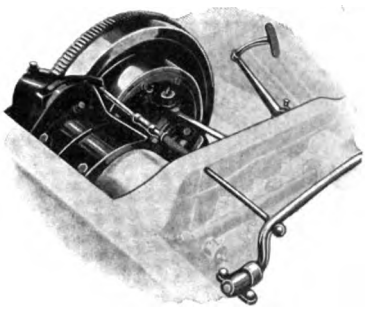
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Exchange Agencies Everywhere

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The Most Efficient of all Starters—



THE Gray & Davis starting motor will crank a car thousands of times in succession. It spins the engine fast enough to fire on the magneto, it is not governed by weather conditions, is extremely powerful and very simple to control. That is why it is the most efficient of ALL starters.

America's leading car manufacturers have adopted this system. It is found on the automobile selling at $1075 and on the car costing $7000. It knows no "price-class" but is to be found on those cars where "price" is disregarded for the sake of getting REAL efficiency.

There is nothing experimental, nothing left to chance. The finest material, the most expert knowledge and years of experience are embodied in the system and show in the results obtained from the use of the system.

Sound electrical engineering practice is absolutely essential if the owner is to get service.

IT is well to remember that the Gray & Davis system represents, down to the smallest details, the very best principles.

Added to the quality of the system is our corps of service stations, 62 in number, situated throughout the United States for the sole purpose of taking care of Gray & Davis users.

The builder who is sincere in his efforts to make a good car—uses Gray & Davis. In fact, this equipment on any automobile is visual evidence of quality throughout the car.

The Gray & Davis starter is economical in use of current. Perhaps MORE economical than any other system.

It not only starts the car under all conditions but the dynamo provides the most brilliant light obtainable.

The Gray & Davis system was designed, developed and built by one of America's foremost electrical engineers.

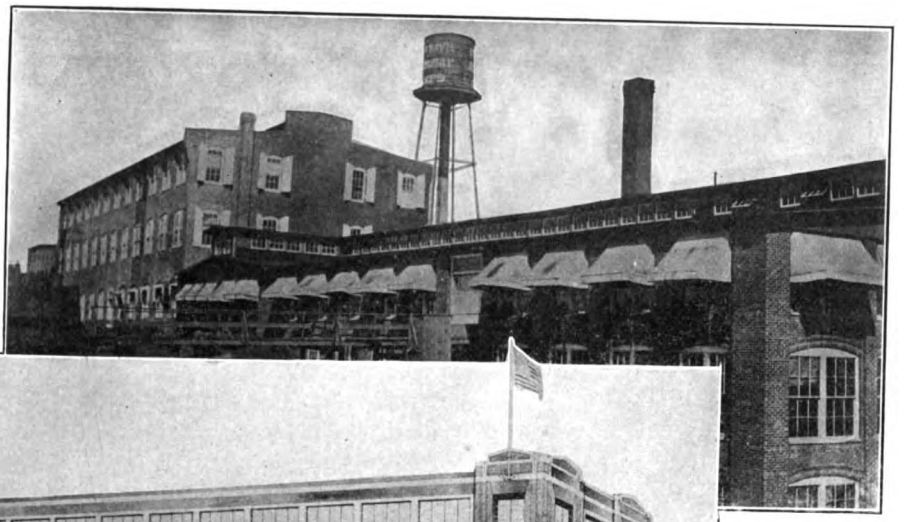
GRAY & DAVIS, Inc.

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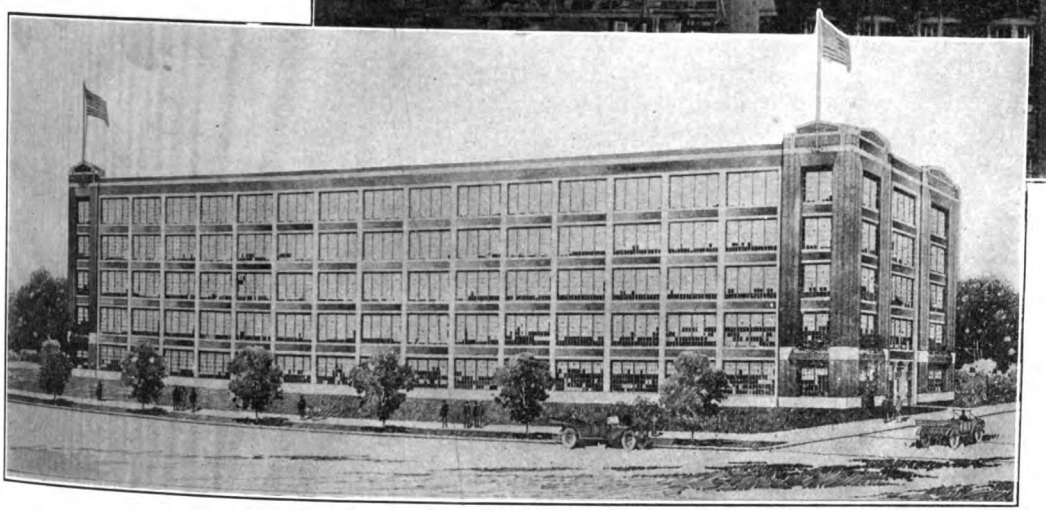
NEXT to efficiency, the car manufacturer demands prompt deliveries. Nothing is so all important as "getting equipment on time," according to contract specifications.

Exceptional facilities are bound to insure the fulfillment of specifications, and what other manufacturer is so well equipped as Gray & Davis to build lamps, dynamos and starting motors?

These Factories Mean Prompt Deliveries —



The Amesbury plant where the lamps are made, now being increased half again its present size.



The new plant in Boston where the dynamos and motors are built.

THE new Gray & Davis factory is the largest plant in the world devoted to the construction of starting-lighting systems.

This magnificent factory contains 140,000 square feet; 70% of the wall area is glass.

Hundreds of trained electricians and machinists work under exceptional conditions building the systems which the motoring public demand.

It is THIS demand that caused us to build the new factory—all of which goes to show that Gray & Davis equipment is preferred by everyone who really knows the great difference in starting-lighting systems.

-Boston ——— Mass

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A Grain of Dust

A sudden gust of wind, a cloud of dust, and a rediculously small speck of dust finds lodgment in one's eye. It causes intolerable pain and inconvenience. Feels like a mountain though it is infinitely small.

The Ellis Gasolene Purifier



Many such grains of dust—or particles of parafine, sediment, etc., find their way into gasolene in spite of every precaution. The prevalence of carburetor trouble gives ample proof that a carburetor is as sensitive to the presence of foreign matter in gasolene as is the eye to a grain of dust.

Sometimes, but not often, just as the eye waters and washes out the offending speck, the carburetor will free itself, but if it doesn't other particles soon collect around the first one and incapacitate it entirely.

Clearly the carburetor is not at fault. The trouble is caused by some foreign substance, some impurity such as dirt, sediment, water or the like. These impurities are things to be eliminated and then there can be no such thing as carburetor trouble.

The Ellis Gasolene Purifier is a patented device designed and marketed with the one idea, that of preventing carburetor trouble by filtering the fuel before it reaches the carburetor. It has been tried in connection with every carburetor made and has always given entire satisfaction. Its filters are impervious to impurities in fuel but do not interfere with the free flow of gasolene to the carburetor. Its gravity method of trapping water out of gasolene is 100% efficient. It is the only remedy for carburetor trouble, a sure insurance against it because it eliminates the cause of such trouble.

Write for full particulars. We will gladly send you letters from prominent users to prove the claims we have made for the Purifier.



The National Sales Company

Sole Manufacturers

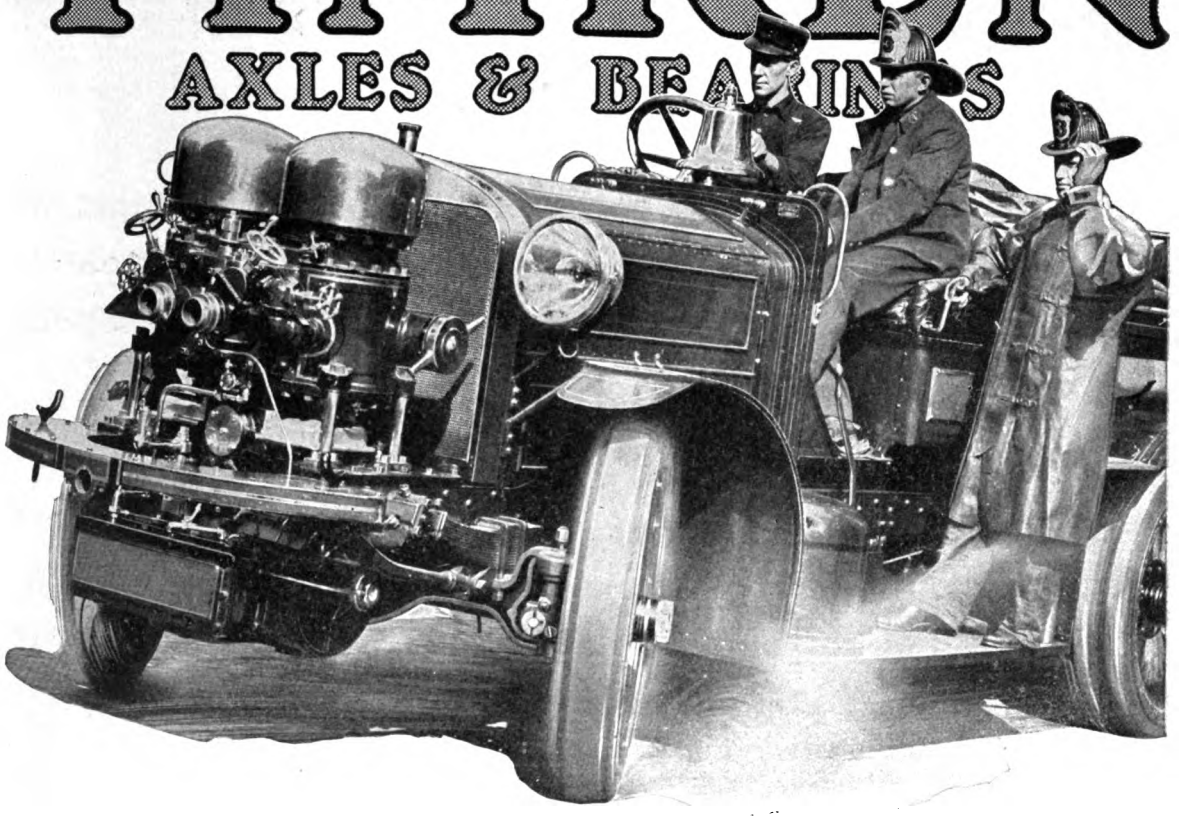
45 Milk Street **Boston, Mass.**

Corr spondence with dealers and garagemen solicited

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TIMKEN

AXLES & BEARINGS



Out For Hard Service



CLANG the gong! Clear the streets! Rush over car tracks! Swing round corners! Take the shortest road no matter how rough! Put on full speed—get to the fire!

Human life is at stake—and property—perhaps the whole town.

Weight on the fire truck is heavy—pumps, hose, ladders and men—and speed is of utmost importance. Nothing can cause delay. The fire truck *must* be dependable. And the foundations of dependability are the axles and their bearings.

Wheel bearings are the buffers that meet the intense shocks, stresses and vibration as the massive engine plunges over rough pavements in its dash to the fire.

They must be better than good bearings, they must be the very best. Bearings that will carry tremendous loads, and in *addition* will meet the severe side-pressure when the heavy engine swings suddenly round a corner.

The Timken Tapered Roller Bearing is the one bearing that meets and withstands *both* these forces. That is why practically all successful builders of fire apparatus have adopted Timken Bearings.

The ponderous weight rests, too, on these bridges of heat-treated steel, the axles.

Head on the Timken-Detroit Front Axle meets every shock and jolt. The gears of the Timken Jack-Shaft transmit the power of the huge engine full force to the chains that drive the rear wheels.

Timken Radius Rods take the tremendous thrust between jack-shaft and rear axle. Their swivel connections enable the plunging vehicle to adjust itself to all unevenness of the road. They supply compensation for every stress from every possible direction.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO
THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.

TIMKEN-DETROIT axles are designed for the *extra* stresses that emergencies bring. Builders of trucks which have extra hard duty to perform turn naturally to Timken Axles and Bearings. Their uniform success under the most severe conditions of motor-car service—pleasure and commercial—has been unparalleled.



YOU can learn more of what good bearings and axles mean, of what Timken stands for in good motor-car construction, by writing for the Timken Primers, T-7 "On the Care and Character of Bearings," T-8 "On the Anatomy of Automobile Axles."

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Re-Sales the REAL Criterion

If after driving his car a year your customer finds that the car is objectionable on account of the increasing looseness of the bolted construction, will he buy the same make again?

If you, as a manufacturer, expect to sell your customers year after year, it is essential that you pay such close attention to your bolted-up construction as will insure proper tightness for the life of the car.

Don't forget, there are THREE points to a nut lock—

SIZE—ANALYSIS—TREATMENT

Are you sure of them all on your car? Would you like the most recent and most scientific data on the subject? Write—

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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Send for a Free Sample Section of the Fisk Pure Gum Tube

Its elasticity, texture and thick wall are self-evident proofs of *quality* and endurance.

Dealers: Stock with Fisk Tubes NOW And Urge Your Customers to Buy Them

because (with proper care) they will be giving just as good service a year from now.

Pure para rubber, vulcanized to the right degree, does not harden or become porous. It makes the logical and economical tube for continuous use, or over winter storage—It *is* The Fisk Tube.


Time to Re-Tire

Write Dept. 23 for Our Dealer Proposition

THE FISK RUBBER COMPANY

Factory and Home Office **Chicopee Falls, Mass.**

Forty-two Branches in Principal Cities

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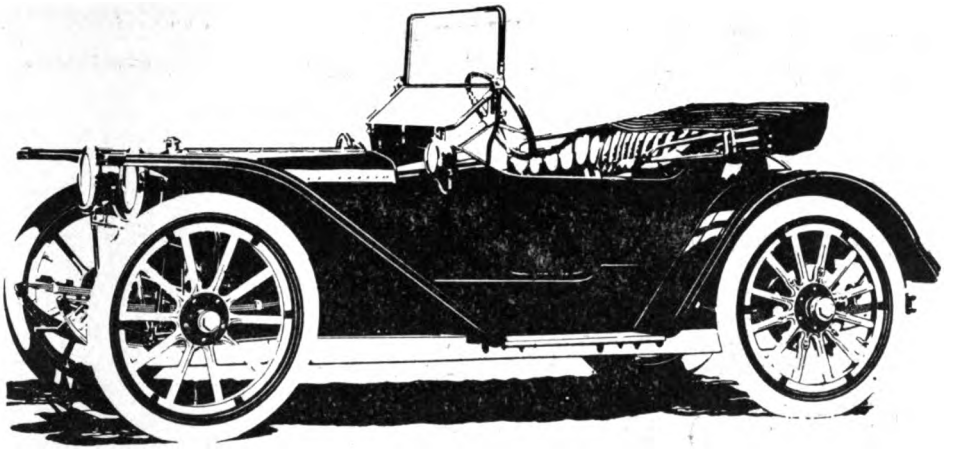
A Life-Size Portrait ~

IT SPEAKS FOR ITSELF



Gurney Ball Bearing Company
Jamestown, N. Y.

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The American Scout (Type 422) $1550

AMERICAN UNDERSLUNG

THE 1914 American Underslung has that unusual piquant characteristic of refinement.

The American Underslung acts as it looks. It skims. The low center of gravity brings a degree of comfort and safety impossible in any other construction. There is no sidesway. Corners may be turned at a better speed.

The luxury-loving require swiftness without perceptible effort — swiftness and quiet. The American Underslung gives it. Here comfort is more a matter of designing than of springs and cushions. It is built into the car itself. The tonneau passenger invariably underestimates the pace.

The larger wheels of the American Underslung bring greater road clearance and tire economy. The straight line drive delivers more of the motor's power. The motor itself is a marvel of today's engineering.

You can only hope to interest the ultra smart people in your vicinity with a car that has all the qualities of the American Underslung. No other car has them.

If you are equipped to cater to such people, it will pay you to take the matter up with us at once.

"SIXES"

American Traveler (Type 646) Six Passengers -	$2950
American Traveler (Type 644) Four Passengers -	$2750
American Roadster (Type 642) Two Passengers -	$2750

All complete with Electric Lights and Starter.

"FOURS"

American Scout (Type 422) - - - - - -	$1550

Complete with positive Starter and Electric Lights.

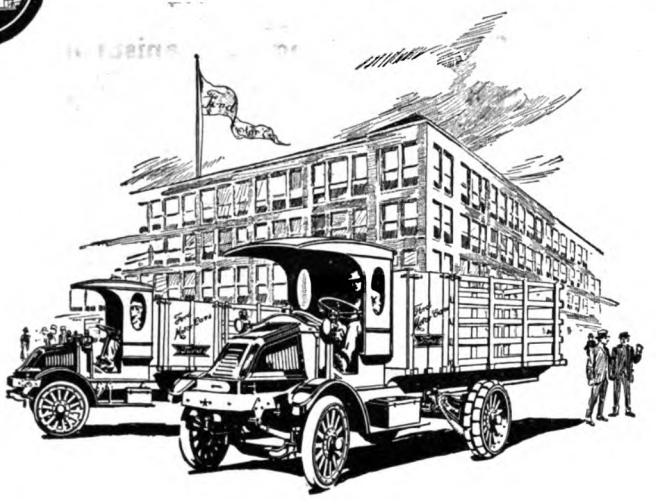
The American Motors Company

426 S. Illinois Street

Manufacturers

Indianapolis, Indiana

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"Two Years Ahead"—

This is the opinion of a prominent official of the Ford Motor Company after he had examined carefully the Kelly water-cooled models.

As a result, the Ford Company purchased two three-ton Kellys—making a total of four Kellys now in use at the Detroit plant. These purchases were made after carefully looking over every truck of national repute.

The Dayton Engineering Laboratories Company (Delco) just bought a three-ton Kelly for its Dayton factory.

These companies know the best truck when they see it. Do you?

DEALERS!
There is still some desirable Kelly territory open. Write for our agency proposition.

The Kelly-Springfield Motor Truck Company
1038 Burt Street, Springfield, Ohio

(65)

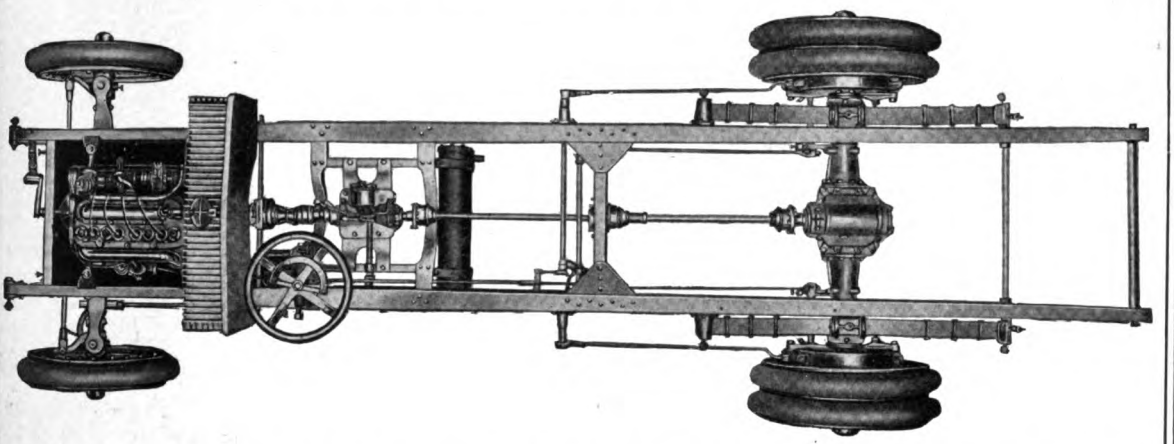
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WORM DRIVE

and a Silent, Powerful, Smooth-Running Mechanism in the

NEW LIPPARD-STEWART; 1½ TON CAPACITY

Chassis Price $2300 F. O. B. Factory



The truck user is today buying motor trucks with a great deal more knowledge of the product than he had a few years ago. He is well posted on construction; he knows modern practice and its bearing on the service the truck will give. It is to meet the demand for just those features which the informed purchaser and the wide awake dealer have been waiting for that the Lippard-Stewart Model F, 1½ ton capacity, is built.

Worm Drive Means Stand-up Ability—Efficiency

With the worm and gear, the quality of service is always maintained at the highest. Engineering tests have proved that Lippard-Stewart worm drive utilizes more actual pulling effort than any other drive system. Wear is practically negligible when compared with that occurring when jack shaft and chains or bevel gears are used. After years of service, the worm drive does its work with the same efficiency as when it was new. Power is applied smoothly—without jolt or jar—without a sound. For these reasons—reasons that no other type of drive will warrant—the Lippard-Stewart rear axle demonstrates its value as a money saver.

Lippard-Stewart Model F's rear axle is of Timken make and is equipped with the famous David Brown worm and gear. It is the product of English and American designers who have specialized for years on axles and worm drive. Its adaptability to truck work makes other rear systems back numbers. It sets a standard for trucks of its capacity. The dealer who sells, or the firm which uses the Lippard-Stewart Model F has a trade advantage by virtue of the truck's up-to-dateness.

These Features Back Up the Advantages of Worm Drive

Lippard-Stewart Model F is an example of balanced construction. The truck's high quality is maintained from end to end. 35 H.P. developed by the Continental motor; automatic governor for speed control; cone clutch and Brown-Lipe transmission with capacity greater than motor rating; straight line shaft drive; frame with the reserve strength to withstand the hardest strains; perfect cooling by a built-up tubular radiator; wheelbase 145″ or 158″; solid tires, 36″ x 3½″ front, 36″ x 3″ dual rear; ease and safety of control; accessibility and simplicity—these features round out a truck that, for its capacity, is the leader in the commercial car market.

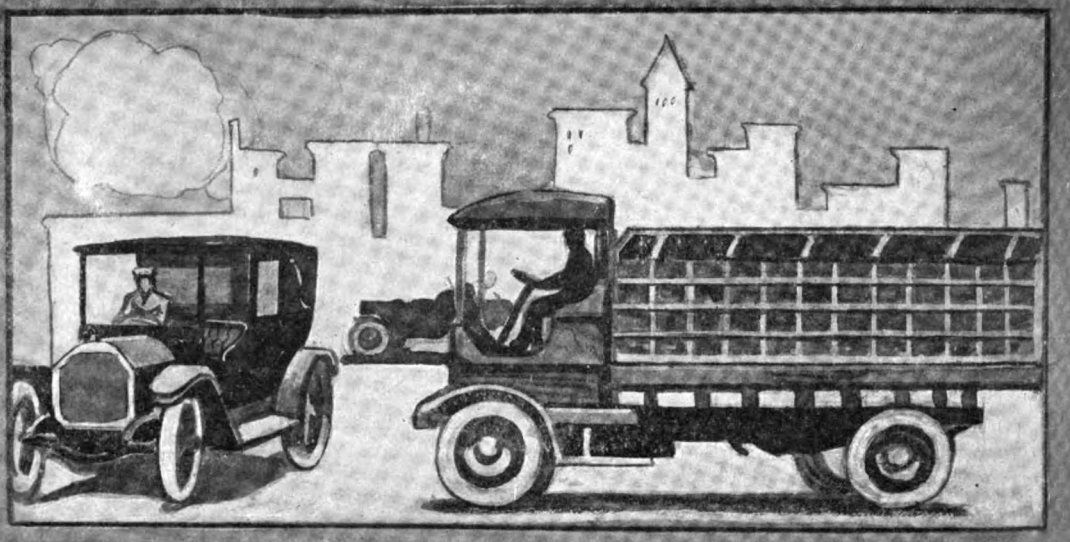
Dealers:

Your knowledge of all that's good in motor trucks will tell you how Lippard-Stewart Model F conforms to what your trade wants. You know how the Lippard-Stewart 1,500 pound delivery car has built up a reputation for satisfactory service. These two models, the complete line, will bring to your salesroom the majority of prospective commercial car business. And the way they measure up to requirements, and their logical prices, mean orders—not simply inquiries. Our proposition holds out money-making possibilities for YOU. Write for it now and ask for descriptive literature. Your territory may yet be unassigned.

Lippard-Stewart Motor Car Co., 1738 Elmwood Ave., Buffalo, N. Y.

August Becker, Pres. & Treas.
J. C. Millar, Secretary
E. J. Barcalo, Vice President
C. S. Dahlquist, Chief Engineer

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JACK SHAFT BRAKES WON'T DO *in* NEW YORK

In the taxi cab service of New York City practically every jack-shaft brake has been discarded for both brakes on the rear wheels.

What is perhaps the heaviest and strongest one-piece rear axle made in America for pleasure cars is frequently broken in taxis, altho never in pleasure cars.

In London, also, the Scotland Yard authorities insist that all motor busses and public service vehicles be equipped with brakes fitted to the rear wheels.

Frequent starting—stopping in the densest traffic—skidding around corners—*safety depends upon the brakes.*

Sheldon Double Brake Rear Wheel Equipment

delivers all the power where the power is needed—and delivers it effectively. It affords unusual freedom from chain, jack-shaft and axle strain and bending. It is the only logical design to stand abnormal shocks because it involves a minimum number of parts subjected to strain.

Consider the enormous reversible strain coming from the rear wheels when the jack-shaft brake is locked! Of course, you can make the parts heavier to withstand the strain—but why add all this unnecessary weight? Then, too, every unit between the brake and the road wheel is an uncertainty which tends to decrease the braking efficiency of the truck. Such construction endangers both the truck and the public.

If YOU are interested in this all-important question of efficient braking, let us send you complete information. Write us today.

SHELDON AXLE COMPANY

WILKES-BARRE, PA.

Chicago Office:
68 E. 12th St.

San Francisco Office:
444 Market St.

Detroit Office:
1215 Woodward Ave.

124H

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Manufacturers, Dealers and Car Owners, READ THIS

"Possibly three-fourths of the tires returned to the manufacturers for repairs have been ridden insufficiently inflated. Insufficient inflation is responsible to a greater extent than perhaps anything else for blowouts and quick disintegration" By F A Henderson, manager adjusting department of Goodyear Tire and Rubber Co.

Tires Are Always Properly Inflated When You Have the

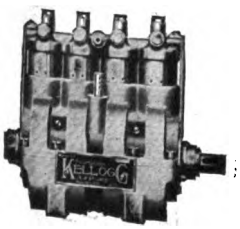
Four Cylinder KELLOGG Tire Pump

All you have to do then is to simply attach the hose from pump to your tire, and shut it off when the gauge registers proper pressure.

No hand pump—with its ever present back-breaking, loss of time and temper—is conducive to proper inflation. Human nature is the reason for its failure.

There's only one sure and safe way—

The Standard Kellogg 4-Cylinder Tire Pump



Standard because it has been used solely for years by the makers of better cars. These makers include Packard, Peerless, Winton, Stevens-Duryea, Lozier, Stearns, Palmer-Singer, Chalmers, Stoddard-Dayton and many others.

No other tire pump can boast our record. No other can equal our efficiency. No other can match our advantages.

Attachments are supplied for installing the Kellogg in practically any model of any car now in use or announced for 1914.

Manufacturers and dealers should investigate at once—for their own profit. Send for our book—"Air On Tap."

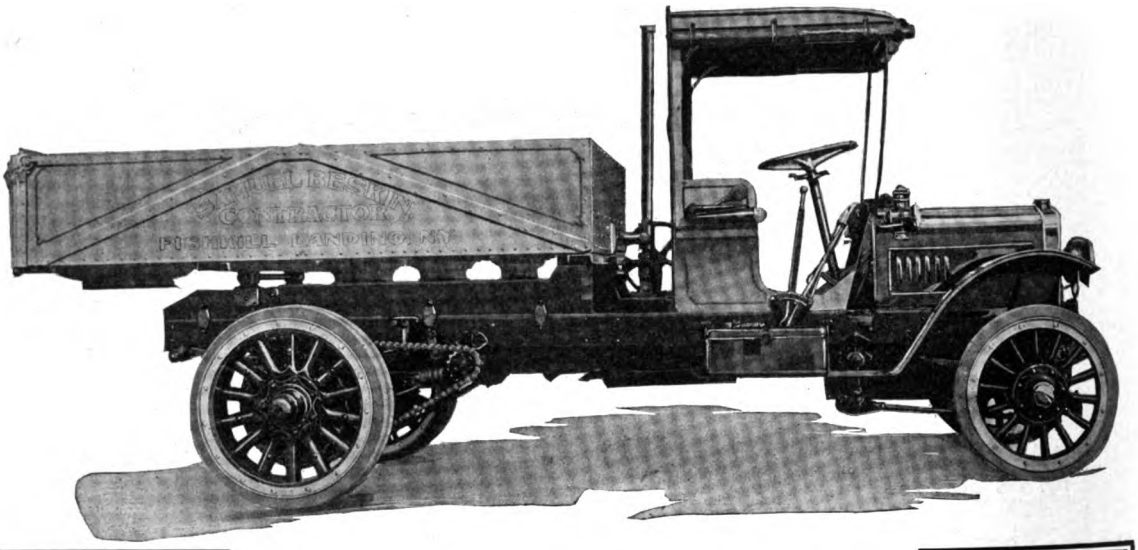
Kellogg Manufacturing Company, Main and Circle Streets, Rochester, N. Y.

New York, 1744 Broadway San Francisco, 444 Market St. Chicago, 1112 S. Michigan Ave.

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THE ATTERBURY LINE

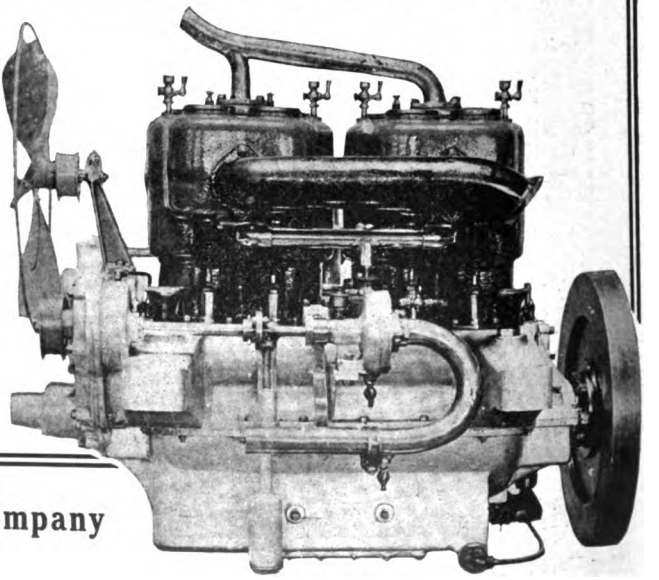


AT least eight or nine years ago we saw the efficiency idea begin to affect the truck business. It began to affect selling first, and its effect on the sale of trucks made it felt in the factory almost immediately. Possibly the selling and advertising branches of the truck industry realized the importance of efficient truck service as a selling help, more to be desired than any other qualification, but nobody, either manufacturer or buyer, realized the importance of developing a construction that would provide efficiency more than we did at the Atterbury Shops.

Our idea of efficiency was broad and farsighted, as events go to prove. We did not increase the pulling power of our motors without we met the extra power with a hitch-up and rear-end to correspond.

We have been working on this efficiency plan for nearly ten years, and we started out with more than the ordinary efficiency as the fact that many of the first Atterbury Trucks built are still in service and giving good results, will testify.

We show here a picture of our standard motor for the three-ton capacity Atterbury. This is the power plant that our experience has determined to be best adapted to the requirements of this particular truck. We would like to go into the details of Atterbury construction with you if you are interested in the truck sales business, and go over with you every point in their make-up, showing you how Atterbury efficiency has been developed and why you can offer your customers one of the greatest pieces of transportation machinery that ever went into anybody's hauling service.



The Atterbury Motor Car Company
BUFFALO, NEW YORK

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"AS SURE AS THE WHIRL OF THE WORLD"

WOMEN WON'T WORRY



Women won't worry if their cars are equipped with Auto-Lite starting motors and lighting generators. They are an open-sesame which removes the last obstacles from the pleasant and successful operation of gasoline motor cars by women—eliminating muscular effort and placing completely within their control the most powerful machines.

The Auto-Lite Starting Motor will turn an average engine faster than 100 revolutions per minute; compelling positive starting.

The Auto-Lite Generator, automatically, furnishes an abundance of electric current—enough to charge the storage battery and keep the lamps burning brilliantly.

Every Owner Should Have This Book

"Handbook on Care and Operation of Modern Electric Systems" so full of interesting information on all modern electric systems that no automobile owner can afford to be without it Explains, in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems. The large operation chart which it contains is alone worth the price. Regular price, 50c. Will be sent to you for 10c. in stamps if you use this coupon.

"The Pioneer Makers of the 6-volt Electric System"

THIS COUPON SAVES YOU 40c.

The Electric Auto-Lite Co.
116 Michigan St., Toledo, Ohio

Enclosed find 10c. in stamps for which please send me your handbook.

NAME_____

ADDRESS_____

THE ELECTRIC AUTO-LITE COMPANY

TOLEDO, OHIO, U.S.A.

BRANCHES

NEW YORK KANSAS CITY SAN FRANCISCO DETROIT

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SPRINGFIELD
CONVERTIBLE BODIES

Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

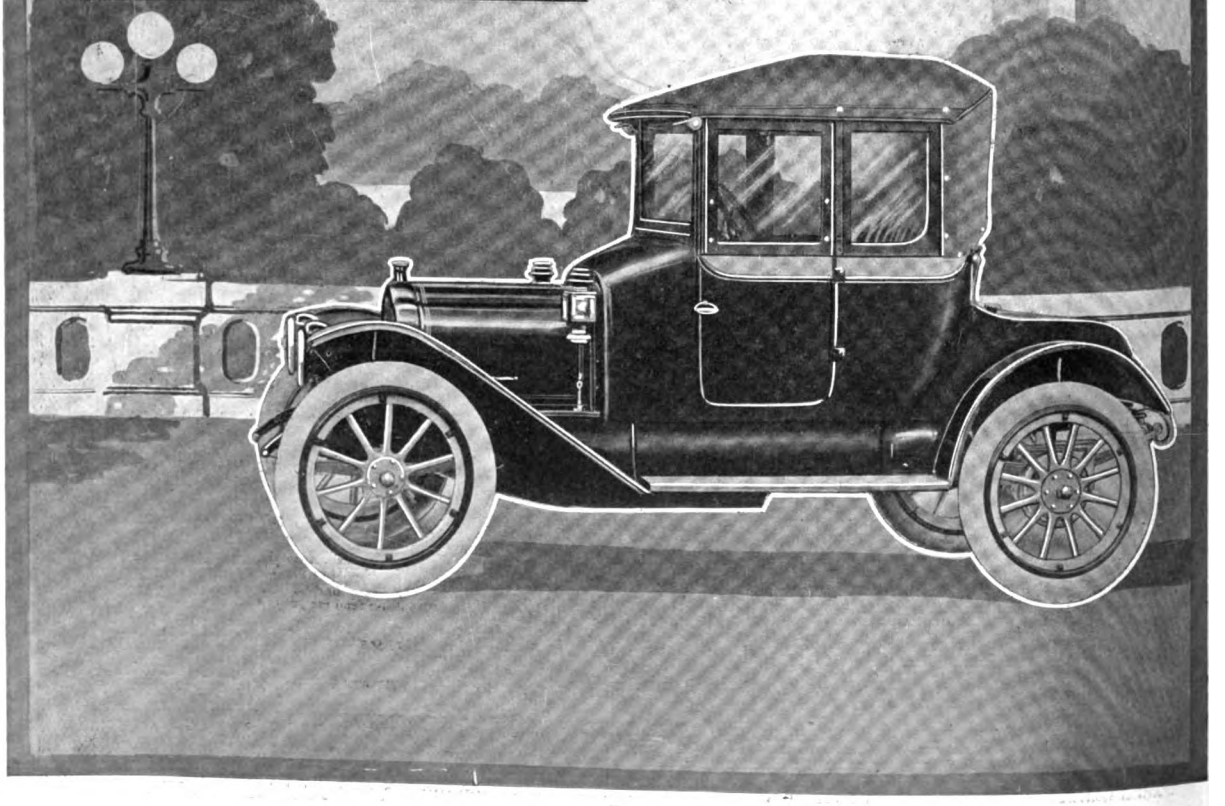
The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

Write for brochure of reproduced photographs.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.

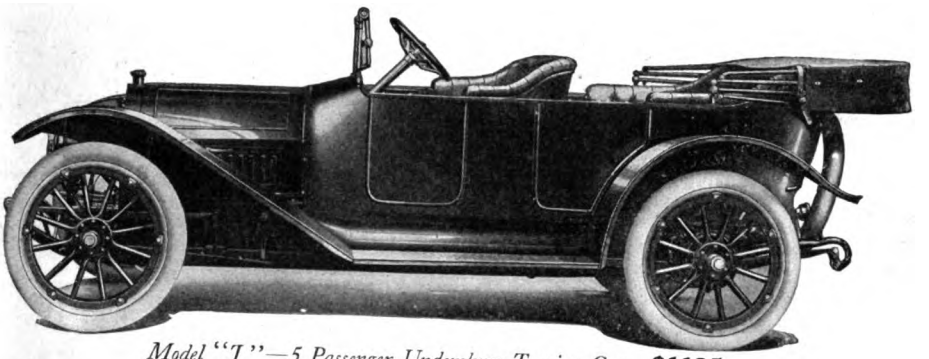


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Rushmore Electric Lighter and Starter

Regal

Left Hand Drive—Center Control



Model "T"—5 Passenger Underslung Touring Car—$1125

Scientific Care of Every Detail— Secret of *Regal Quality*

THE New Series of Regal Cars has increased our reputation as builders of automobiles of quality. This fact is now recognized by dealers and consumers the world over.

And the secret of Regal Quality is—*scientific and conscientious care in the construction of every single detail.* Thus, perfect details result in pefect Regal Cars—automobiles of utmost efficiency, long-life, power, beauty and economy.

The new Regal Cars are *finished products*—complete in every detail of mechanical construction and body beauty. They actually *look like* cars costing $2000 or more because of their refinement features and external appearance.

Every desirable advancement is found in these new cars. No more motor car value can be purchased anywhere this year for such prices.

Values Offered You—

We have incorporated the efficient and positive Rushmore Electric Starter and Lighter as standard equipment on all Regal Cars. The desired left hand drive and center control have been adopted. Other features of our standard equipment are: Electric headlights, with dimming attachment. Long, low, sweeping body lines with cowl dash. Starter, lighting and speedometer switches on instrument board. Special adjustable curtains. Rain vision and ventilating windshield. Demountable rims. Tire irons. Foot throttle and muffler cut out.

The New Series—

Our New Series includes Model "T", a large and beautiful 5-Passenger, underslung, touring Car at $1125—Model "N," an efficient, speedy, underslung roadster, $1125—Model "NC," an elegantly finished and appointed, underslung coupe selling at $1600 and Model "C," a big, powerful, 5-passenger overhung car for $1350. The underslung values of extreme safety, economy and beauty are developed to the highest point in our Underslung Models.

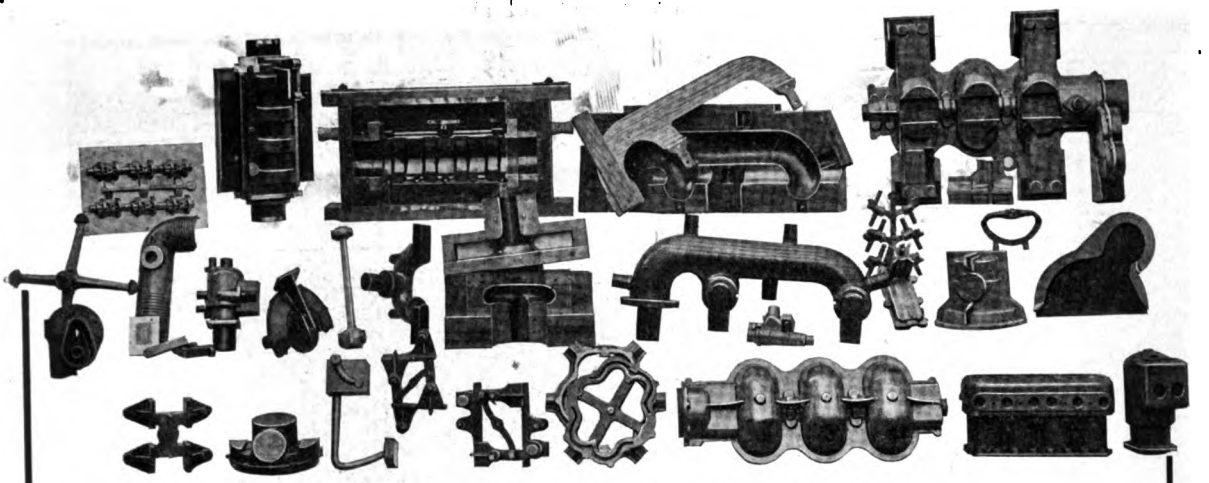
Dealers—Write Today

We desire wide-awake, aggressive dealers in certain territory still open. You may be just the right man. We give our dealers excellent co-operation and unusual factory service. Write or wire us for our New Series Literature, *with complete specifications and prices*, and our attractive dealers' proposition.

Literature sent to prospective purchasers on request.

Regal Motor Car Co. 263 Piquette Avenue, Detroit

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Wood and Metal Patterns for Automobile Parts

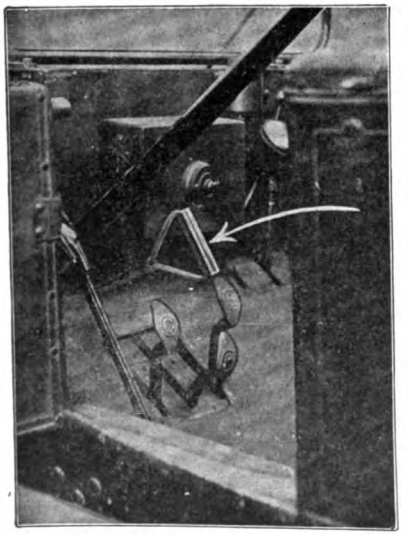
Did you ever see a more concrete example of practical simplicity in pattern work? The more carefully you study the illustrations the more clearly you will see why our service cuts foundry costs.

MICHIGAN PATTERN WORKS

Now in our new modern factory

1085-9 JEFFERSON AVENUE **DETROIT, MICHIGAN**

STOP!---SAVE MONEY



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.

1421 Michigan Ave., Chicago, Ill.

$9.00--FORD ENGINE STARTER--$9.00

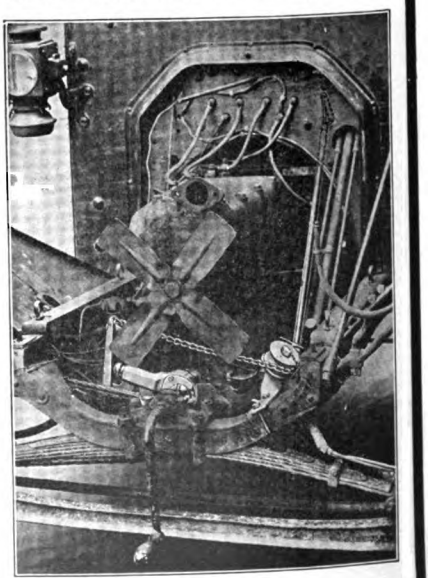
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



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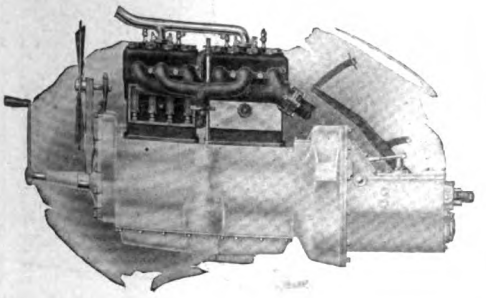


Oiling System

To insure long life and a minimum of wear, special attention has been given the oiling system of Ergon Motors. In line with the best standards it is the combination force feed splash system. In each complete circulation of the oil it is run through very fine mesh strainers. Small reservoirs are provided so as to collect and distribute more than the ordinary supply of oil to main bearings and to the front gear chamber.

Hazard Motor Mfg. Co.

Rochester, N. Y.



COX OXYGEN CARBON CLEANER



New
Thorough
Quick
Inexpensive
Harmless
Efficient
Necessary
Profitable

The first really efficient and thorough method of cleaning carbon out of the cylinders is the new Cox Oxygen Carbon Cleaner. It consumes every particle of carbon, even in corners where it could never be scraped out, without the slightest possibility of harming the cylinders.

It takes from 6 to 10 minutes to clean each cylinder, averaging 30 minutes for a four-cylinder motor and 45 minutes for a six. Any workman can do it. Does not require experience or expertness. Absolutely safe to handle.

For Public Garages

The profit possibilities for you in the Cox Oxygen Carbon Cleaner are only limited by the number of your customers. You do the work in one-tenth the time and only a fraction of the cost of any other method. Motorists will pay you well to clean their cars regularly. It is just as necessary as washing the car. This new method will quickly establish the custom of regular cleaning.

For Large Private Garages

For private garages in which more than one or two cars are kept, the Cox Oxygen Cleaner is a good investment. It pays for itself in the greater economy and improved running of the car.

Write Us Today

and we will prove that your profit per cylinder is almost gross—that you can actually pay for the carbon remover several times over inside of a week—this has been done.

Get the information—read the detailed facts—learn still more about the integrity and responsibility back of the house that guarantees every claim made for this—the only REAL carbon cleaner.

COX BRASS MF'G. CO.
ALBANY, N.Y.
1779 Broadway
New York City
870 Woodward Ave
Detroit, Mich

COX BRASS MFG. CO., Albany, N. Y.
Gentlemen: Please send me full information about the Cox Oxygen Carbon Cleaner.
Name .....
Address .....
City .....
State .....
M. W. 10.3

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Mr. Manufacturer: The Surest Way to "Profit by Your Mistakes" Is Not to Make Them!

The biggest single *opportunity* for the car manufacturer to make a mistake is *passed in safety* when he decides on the

You can buy better and cheaper from a SPECIALIST than from your own "Motor Department"

"sweet tempered"

BUDA MOTOR

"The Part That Sells the Car"

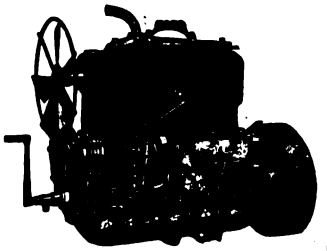
1914 Specifications:

Model "SS"—6 Cylinder Motor 3½x5½
Model "T"—4 Cylinder Motor 4¼x5½
Model "O"—4 Cylinder Motor 4½x5½
Model "Q"—4 Cylinder Motor 3¾x5½
Model "M"—4 Cylinder Motor 3¾x4½

Model "SS" furnished either as separate Motor or with Bell Housing Crank Case.

Models "T," "O" and "Q" furnished either as separate Motors or with Bell Housing Crank Cases. Also either for sub-frame or main frame support.

Model "M" furnished in separate type only for sub-frame support.

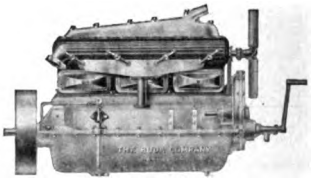


Buda Model "T"—4 cyl.

One reason *why* "it sells the car" is that car buyers have become aware of the unequalled worth of the BUDA Motor and (you know it's a fact)

When The CONSUMER Knows What He Wants,—"arguments are not in order."

His educated preference is a mighty force in your favor and to have him on your side, you must give him *what he wants.*



Model "SS" Buda "Little Six"

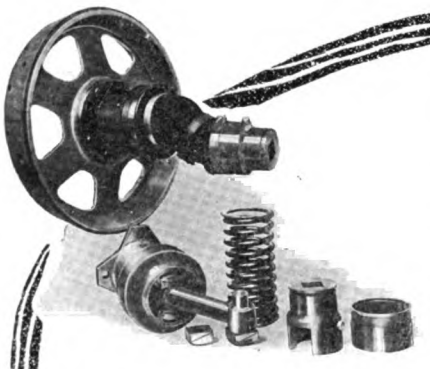
THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb)

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG AND COMPANY

1108 SOUTH MICHIGAN AVENUE, CHICAGO — FORD BUILDING, DETROIT — 57TH AND BROADWAY, NEW YORK CITY



One or two good concerns who want the better class of workmanship

will find on investigation that KONIGSLOW gives a brand new idea of value and service on CLUTCHES and the things that go with them.

If everybody realized that the CLUTCH is the ***point of contact with the driver***—the place in the car where he feels things—KONIGSLOW simply couldn't supply the demand.

As it is, there are some few good responsible concerns who know this. They want a CLUTCH that reminds the driver he is driving a mighty good car. To such manufacturers our products will appeal. We promise the right workmanship and the right service.

Don't wait until you are ready to place orders—write us today. Remember KONIGSLOW'S CLUTCHES talk for you more than they do for KONIGSLOW.

For
Clutches
Rocker Shafts
Control Levers
Universal Joints
See

KONIGSLOW CLEVELAND

The Otto Konigslow Mfg. Co., Cleveland

DETROIT OFFICE: J. H. Gould, 1202 Majestic Bldg.

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First and Still the Best

The following New and Exclusive MECHANICAL FEATURES

are on the McCaskey Register Only;

THE EXPANSION FEATURE — Alphabetical, Numerical and Interchangeable Index
ELECTRIC RECORDER — Duplex Section containing Accounts Payable under lock and key
KWIKFIND NON-SLAM LEAVES. Daily Trade Builder
INDISTRUCTIBLE PATENT LEAF HINGES

With Only One Writing **The McCASKEY SYSTEM** The End of Drudgery

More Than 100,000 Merchants will tell you the McCaskey System is only One Writing. Prevents Disputes and Forgotten Charges. Every Account Totalled and Forwarded with each purchase. Is an Automatic Collector. Limits Credit automatically. Abolishes Bookkeeping—Night and Sunday Work—Posting and Worry. *A POSTAL WILL TELL YOU MORE*

THE McCASKEY REGISTER CO., Alliance, Ohio

BRANCHES: New York, Chicago, Boston, Washington, Pittsburgh, Memphis, Atlanta, Kansas City, San Francisco, Cincinnati; Dominion Register Company, Ltd., Toronto, Canada; Manchester, England.

The largest manufacturers of carbon coated salesbooks in the world



Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

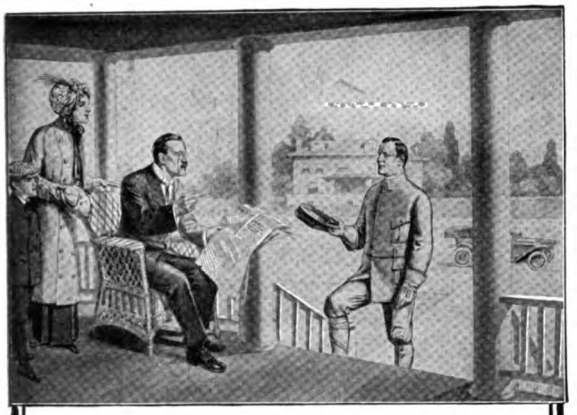
The **Bicycling World** FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday — $2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to *prevent* accidents.

"I can't afford to take *any chances.* We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of *Weed Chains* and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—*Life Insurance* and *Accident Insurance Companies* strongly endorse them and recommend their use. *Taxicat Companies,* for their own protection, *insist* that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

Splitdorf "Ford Special"

Waterproof High Tension Magneto

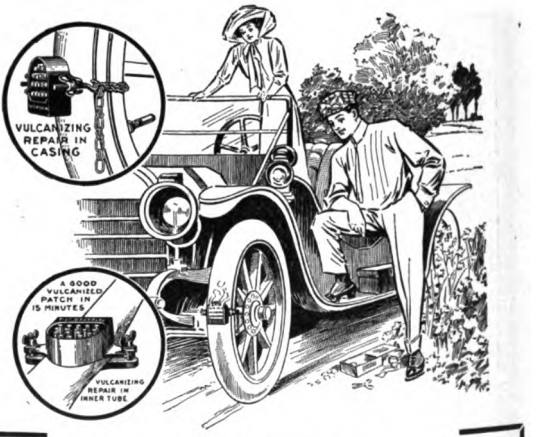
is enclosed gear driven—no chains or open gears—and is a magneto of the highest grade of attractive appearance and easily installed upon Ford cars.

A SPLITDORF "Ford Special" magneto increases motor efficiency 33⅓ per cent., saves its cost in less gasoline consumption, assures constant electric lighting and is installed easily, quickly and inexpensively.

Write to nearest Branch House for Details

SPLITDORF ELECTRICAL COMPANY

Atlanta, 10-12 E. Harris St.
Boston, 180-182 Massachusetts Ave.
Chicago, 64-72 E. 14th St.
Detroit, 972 Woodward Ave.
Kansas City, 1823 Grand Ave.
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Los Angeles, 1226 S. Olive St.
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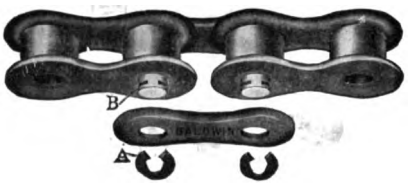
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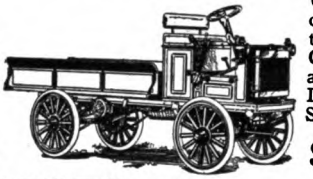
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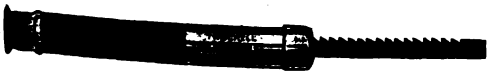
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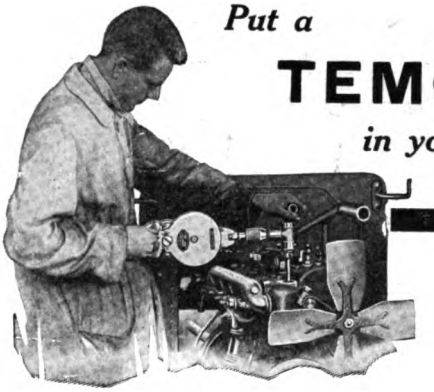
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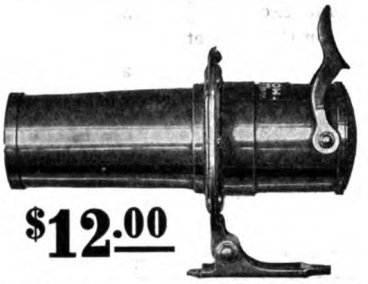
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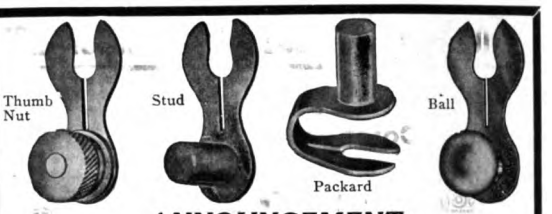
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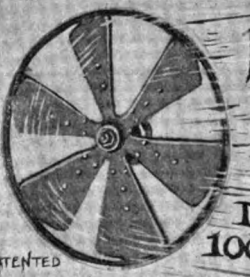
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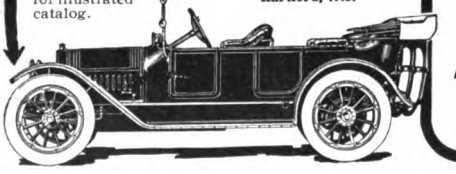
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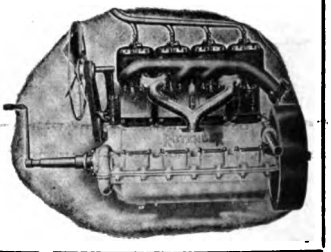
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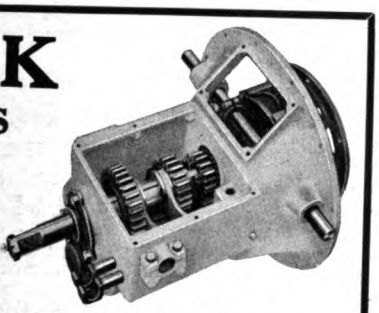
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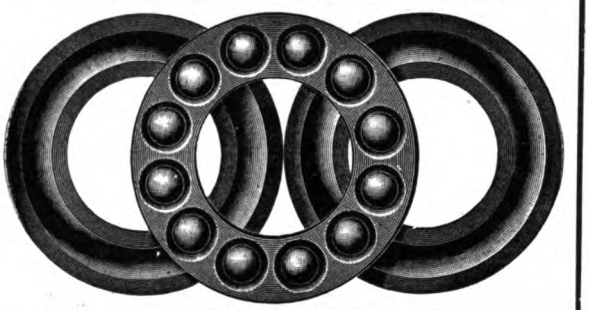
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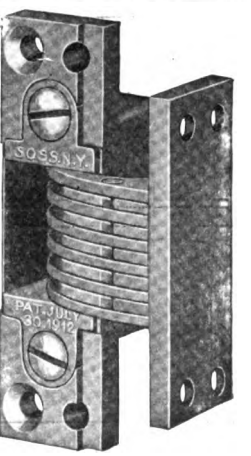
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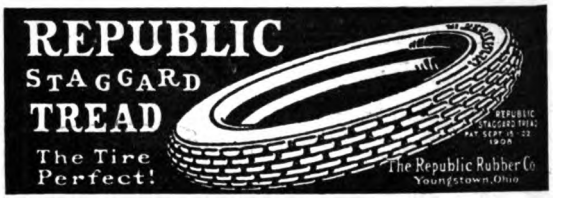
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Blow-out repairs that outlast the tire

The only way to make durable blow-out repairs economically is to reinforce the tire with fabric applied to the inside, fill the hole through the tire with Para gum, then apply heat both to the inside and outside. This method avoids cutting away and wasting a lot of expensive tread stock, requires a minimum of fabric and makes a repair that is stronger than the tire. Anyone can use it because the work is all straightforward, requiring no special experience. One set of forms fits all sizes of tires. No extra moulds required.

SHALER Steam Vulcanizer

The Shaler is the only steam vulcanizer that permits using the approved wrapped tread method as it is the only one that applies heat to the inside and outside of a tire simultaneously. It makes perfect blow-out repairs.

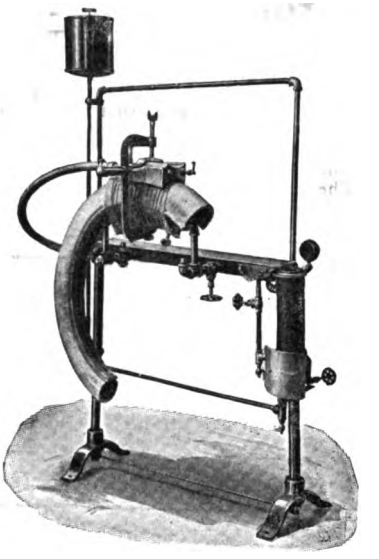
To make it complete as a garage equipment it is provided with a tube plate 4 x 30 inches that will mend six tubes as quickly as one.

The boiler, a conical copper coil, heated by a powerful gas or gasoline burner, raises steam so quickly that you can profitably heat the Shaler even if you only have a tube puncture to mend.

The essential Shaler feature of a thermostat to hold the temperature at the vulcanizing degree automatically makes it impossible to overheat a tire. Simply light the burner, and steam is raised to the correct pressure and held there indefinitely.

Price of the complete outfit, including all attachments for tube and casing work, $45.

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Write today on your letterhead for a copy of "Common Sense About Tire Repairs." It contains a lot of money-making ideas about the most profitable part of the repair business.

Notice to Customers Who Desire to Use "Whitney" Chains of the Silent Type

Copy of Circular Issued May 14, 1913

Since we commenced to market chains of the Silent type, we have made special effort to impress upon our customers the necessity for providing proper conditions for both chains and sprockets. We have pointed out that sprocket blanks must be turned to the right shape and that the teeth must be correctly cut. Sprockets should not have less than 15 teeth, should be larger if possible, and should be kept accurately in line. We have also urged on our csutomers the importance of selecting chains wide enough and large enough for their purpose and we have asked that in all cases customers make a thorough and exhaustive test before ordering in quantities to make sure that all conditions have been properly provided for. As a means to this end we have requested that the sprocket teeth be cut either by the customer or by The Whitney Mfg. Co. and not by some third party. In spite of these warnings we now find cases where our chains may fail to give complete satisfaction because some customers are already using them on improper sprockets, or have adopted chains too small in pitch or too narrow for their conditions.

We therefore desire to state that customers who do not follow our suggestion, but on the contrary secure sprockets wherever they please and possibly where they can secure the lowest price, are liable to obtain incorrect sprockets, so that at any moment we may feel compelled in such cases to discontinue shipments of chain, or insist that sprockets be sent to us for inspection at the customers' expense, before furnishing chain.

We will endeavor to force customers to use our chains on correct sprockets and to use chains of a sufficient size for the purpose even if we get certain customers into temporary difficulty. The ultimate result, however, we believe will be beneficial to all.

If a customer will explain the conditions for which our Silent chain is desired, we will be pleased to recommend a size of chain for trial, but, as stated above, we advise that chains shall not be purchased in quantity until a severe test has been made and the results found satisfactory.

In the early days of the Bicycle industry and when Roller chains were first used for the main drive on automobiles, certain customers used our chains on incorrect sprockets and we shielded them in every way possible, letting the chain take the blame for unsatisfactory results. With the Silent chain we will positively not follow this plan, and if customers adopt chains without making proper tests, and use them on poor sprockets, or under unfavorable conditions, they must take the consequences, for we certainly shall accept no responsibility in the matter, though such customers would, of course, have our sympathy and we would do our best to render assistance.

We must positively maintain our position, as outlined above, as we do not intend that our chains shall be unjustly condemned if we can help it.

THE WHITNEY MANUFACTURING COMPANY, Hartford, Conn.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

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FOR SALE—Machine shop and garage; will invoice about $3,000; no opposition; a money maker. The Ford agency can be had for the county. CITY GARAGE AND MACHINE SHOP, Buffalo, Okla.

U. S. A. Patent Rights for sale of the "Simplex Steel Motor Piston," also the Duplex Piston Ring, largely in British, U. S. A. and foreign cars. British and French patents already disposed of. Apply, THE OXYGEN WELDING WORKS, LTD., New Summer St., Birmingham, Eng.

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A black gloss finish not affected by grease, heat or gasoline. Keeps the engine clean and the metal parts from rusting. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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For brass, nickel or iron. Bakes to a high gloss finish that will not crack, chip or peel. Solid covering one coat, without a primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Our new Model B uses successfully half and half mixture lowest grades kerosene and gasoline. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special Agents' prices. Dept. 9. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

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Send for Booklet 58

The Motz Tire and Rubber Co.

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will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

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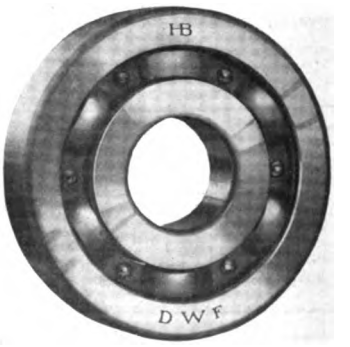
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Orders accepted after November 1st; deliveries begin December 1st.

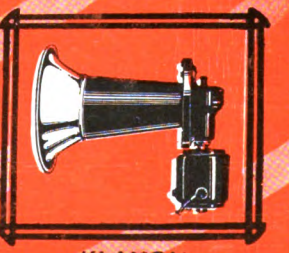


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They are symbols of manufacturing integrity; and of great manufacturing resources.

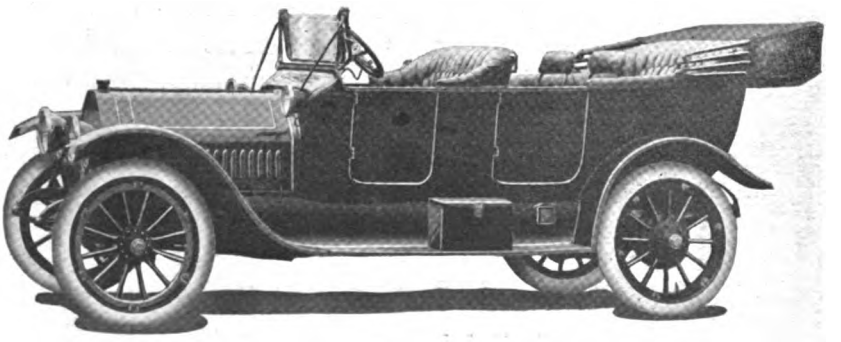
They stand as the realization of the Studebaker ideal—which may be summed up as the sincere desire to give the greatest possible value that can be given for a stated sum.

They represent the Studebaker spirit—which binds the dealer afield to the factory; and the owner to the dealer, through a service that never relaxes its vigilance or its earnest purpose to satisfy every owner.

Buyers' confidence in Studebaker integrity, sincerity and service is what impels dealers to seek the Studebaker representation.

Studebaker "25"—$885 **Studebaker "35"—$1290**
Studebaker "SIX"—$1550

Studebaker **Detroit, Mich.**



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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVII
No. 5

New York, October 23, 1913

Ten cents a copy
Two dollars a year

The Electric Double Deck Disco

All Starters, Finally Must SPIN Like This

150 R. P. M.

—that is the speed of the Electric Disco every time you push the button.

And that **spinning** will start **any car** in a very few turns-over. The motor may stand idle for hours in the coldest weather. But it cannot fail to answer the Disco.

The first one or two turns are slow so there is no jar on the engine.

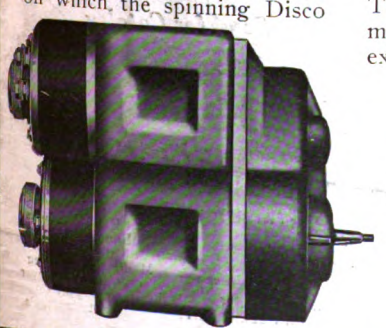
This is the necessary starter —especially in winter.

For most so-called starters are merely "crankers." They simply "churn" the motor. The Disco **spins** it, as men spin theirs by hand when those "crankers" fail to work.

Watch the Cars Coming Out

Watch the cars coming out on which the spinning Disco has replaced the churning starters. Thousands of motorists have had experience. They know starters now must **spin.** They don't want to and won't wait for slow starters. They know that slow starters often fail absolutely during the winter months.

Sooner or later all starters must spin, for men, who know, will have no other kind.



A Small Extra Cost But ONE-POINT Connection Saves It

The Electric Disco, the wanted spinner, costs more to make and to buy than the churners but the cost to install is less because one connection, done with less time and trouble, is all that is necessary. That saves enough money for manufacturers to pay the small extra purchase cost.

Simple, Compact, Uses LESS CURRENT

There is no simpler starter. This Double-Deck two-unit construction is compact as a motor generator.

And though making 150 R. P. M., it uses less current than churning starters, because it starts every motor quicker. We may use more current per second but we require fewer seconds to start.

That means a full charge in the battery always. Six Disco-equipped cars were tested after each had run 25,000 miles. Every battery finished charged to capacity, and in absolutely perfect condition.

That's because the Electric Disco starts INSTANTLY. And every man who wants a starter wants one to do that.

An Interesting Book

will be sent free to manufacturers, motorists and dealers, fully describing the Electric Disco, and the double-deck design. It also deals with starters in general. It will profit all motor car men to read it.

THE DISCO COMPANY

715 Dodge Building
DETROIT, U. S. A.

Starting **Lighting**

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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The New Automatic Truffault-Hartford Shock Absorber Provides Even Riding on All Roads

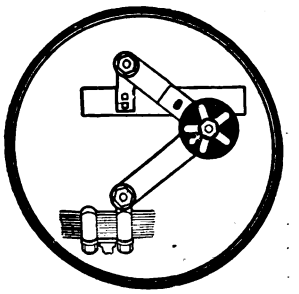
In view of the radical variation in road conditions today, more than ordinary importance is attached to the introduction of the New Automatic Truffault-Hartford Shock Absorber. This latest development in shock absorbers paves the way to easy riding on all roads—in effect, creating the impression of motoring on one continuous stretch of boulevard.

Passing from one kind of road to another has always been attended by an easily perceptible difference in the riding action of the car.

With the perfection of this new type of Truffault-Hartford, the amount of control exerted depends entirely on the character of the roadbeds over which the car is traveling.

On smooth roads the New Automatic offers sufficient resistance to eliminate the slight but noticeable spring oscillation there generated, but without impairing the flexibility of the spring.

The amount of frictional resistance is automatically doubled, however, as soon as the road changes from smooth to moderately rough and the normal action of the spring is so perfectly maintained that the occupants of the car are unaware that the road surface is altered in any way.



There is a third and still greater degree of tension exerted by the New Automatic which is effective in two ways. It preserves ease of riding on even the roughest road and prevents excessive spring deflection and rebound when the wheels of the car strike some road obstruction such as a cross walk, car track or culvert.

All three tensions are self-regulating and self-adjusting and easily set to the proper degree for every kind of automobile spring from the thin leaved, highly flexible type to the heavy thick-set type.

No other shock absorber built can compare in efficiency of operation with the

New Automatic

Truffault-Hartford

SHOCK ABSORBER

It is the logical spring control guaranteeing the greatest ease of riding and adding materially to the mileage of tires and to the life of every car part. Price $60 per set of four. Other Truffault-Hartfords $50, $40, $25 and $15. Order by name from your dealer or from any branch.

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Insist Upon Truffault-Hartfords on Your New Car

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A Valuable Introduction

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Manufacturers and Dealers alike want in their cars bearings that will help sell them—smooth-running, durable, economical, efficient bearings—for upon bearing efficiency depends the satisfactory and quiet operation of any car, gasolene or electric.

There is an R. I. V. for every need and no high-class maker can afford to omit them.

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"The Tools That Are Guaranteed"

B & S tools are drop-forged of the best steel for the purpose. Their adjustment is sure, exact and convenient. Almost a half century of tool making experience has made them the "Standard Tools of Quality." The Billings & Spencer catalog shows a full line of standard tools.

Write for it ! ! !

THE MARK OF QUALITY
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THE BILLINGS & SPENCER CO. HARTFORD

The Billings & Spencer Co.
Hartford, Conn.

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, October 23, 1913 No. 5

JEFFERY, TOO, DECIDES TO DISPOSE OF ITS BRANCHES

Turns Chicago, Milwaukee and San Francisco Branches Over to Dealership Concerns—Arranging to Sell Remaining Three.

Apparently branch houses of automobile manufacturers soon will be few and far between. During the past several months the Studebaker, Franklin and Lozier companies, among others, have discontinued all of their branches and now the Thomas B. Jeffery Co., of Kenosha, Wis., is doing likewise, three of its six branch houses already having been turned over to local interests—those in Chicago, Milwaukee and San Francisco.

The San Francisco house, which until January last was managed by Louis H. Bill, who is now general manager of the parent company, has been conveyed to the Jeffery Auto Sales Co., which will control the distribution of the Rambler, or Jeffery car, as it is hereafter to be called, for all of the Pacific Coast States. The personnel of the new San Francisco company, however, has not yet been disclosed.

The Chicago branch has been turned over to the Centaur Motor Co. of Illinois, of which A. M. Robbins is manager. It is stated that this deal was consummated some time ago, but for some reason the news was not permitted to become public property until this week.

In Milwaukee, the Reeke-Osmond Motor Car Co. has taken over the Jeffery establishment and will control the State of Wisconsin and the northern peninsula of Michigan. The new company is composed of Al Reeke and N. E. Osmond, who previously were manager and head salesman, respectively, of the Jeffery branch, and Henry M. Vogel. The latter is secretary-treasurer, Reeke being president and Osmond vice-president.

Deals also are pending in New York, Philadelphia and Boston whereby those branches also will be turned over to local interests.

New Men to Make Feps Carburetter.

Because, it is stated, the money did not come in fast enough, the Schoen-Jackson Co., of Media, Pa., has literally abandoned the Feps carburetter but, despite the fact, its manufacture will be taken up and continued by the men who have had to do with it since its beginning, chiefly J. Fritz, the inventor, and J. H. Oman, of the Oman & Bub Advertising Agency. They were the men who interested Messrs. Schoen and Jackson, former owners of the Pressed Steel Car Co., in the device, and though the Schoen-Jackson withdrawal will cause a short temporary halt, Fritz and Oman already are in touch with another company which they are sanguine will take up the work where Schoen-Jackson left off.

The Feps carburetter is one of the most ingenious of the many which recently have made their appearance and attracted a surprising amount of attention, but, despite the great promise, its financial sponsors apparently were not possessed of the patience to await the ripening of the harvest.

Reo to Distribute 60,000 Truck Shares.

Sixty thousand shares of the Reo Motor Truck Co.'s stock, par value $600,000, held by the Reo Motor Car Co., of Lansing, Mich., are to be distributed to the stock holders of the latter. As their names suggest, the two companies are intimately related, but the cutting of a melon in exactly this form had not been generally anticipated. It followed the declaration of a 7 per cent. dividend on the Truck stock.

More American Starters for Foreign Cars.

More evidence that interest in engine starters is increasing abroad is evidenced by the placing of a considerable order for Gray & Davis lighting and starting outfits by Arrel-Johnston, Ltd., of Paisley, Scotland. The company is among the best known of the British car makers.

ON RAGGED EDGE FOR THREE MONTHS, INTER-STATE FALLS

Admits Insolvency and Liabilities of Half Million—Internal Dissension Aids Downward Course—Paid Debts With Its Overstock.

After swaying to and fro for all of three months, the Inter-State Automobile Co., of Muncie, Ind., on Friday last, 17th inst., was placed in the hands of a receiver—M. J. Broderick, president of a boiler company bearing his name.

The action was taken on the petition of Thomas F. Hart, president of the Inter-State company, who admits that it has liabilities of $500,000, which it is unable to pay, and is insolvent. Hart's petition also makes public, what was not generally known, that internal dissension had racked the company for a considerable period, and to this fact he attributes its inability to obtain money when it was needed.

Its liabilities of approximately $500,000 do not include its outstanding capital stock, amounting to $195,000 common and $100,000 preferred.

The failure of the company has been so long foreshadowed that the appointment of a receiver will be accepted almost as a matter of course. Quite apart from internal quarrels and inability to borrow money, the company had an overstock of cars and for three months it has postponed the evil day by inducing many of its creditors to accept cars in payment of their respective claims.

The Inter-State company was organized largely through the efforts of Dave W. Henry, who "graduated" from the old Electric Vehicle Co., of Hartford, Conn., and was, in fact, his first promotion. After he was ousted, he organized successively three other automobile manufacturing companies in the West, all of which, however, were quickly overtaken by misfortune of one sort or another.

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PALMER'S OWN FINANCING RIVALS MICHIGAN FIGURES

Financial Genius of Buggy Company Owes $1,656,228.70 and Has $103.28 in Cash—Further Revelations of Bankrupt's "Rottenness."

If the Michigan Buggy Co., of Kalamazoo, made a picturesque failure, what must be said of Victor L. Palmer, its secretary and financial genius?

When the probe first reached the rottenness of the company, three of Palmer's creditors, as stated in Motor World, deemed it wise to file a petition in bankruptcy against him, but it was not until Thursday last, 16th inst., when he filed his schedules in bankruptcy, that the real picturesqueness of Palmer's personal failure became apparent; they proved that whatever else may be said of him he was no "piker." The schedules showed liabilities of $1,656,228.70 and assets amounting to but $21,122.28. The assets were made up as follows: Stocks and bonds, $20,000; wearing apparel, $120; cash on hand, $103.28; household goods, $120; other property, $779. His liabilities were made up chiefly of notes held by 18 banks, scattered from Wall street to the Rocky Mountains. Of the worthless paper, one Chicago bank alone holds more than $100,000. Kalamazoo's profound amazement that one man could obtain such credit in so many banks will be shared by the automobile trade.

Palmer's schedules were filed at almost the last hour allowed by law. Before he filed them he had spent two hours on the stand as a witness in the trustee's investigation of the company's affairs. Among other things, he was asked pointed questions concerning his knowledge of a Kalamazoo club, with a roulette wheel attachment, of which, it was intimated, he had guaranteed at least part of the rent and at which the company's customers were entertained.

When asked whether he ever took any of his stenographers to the establishment, he expressed doubt, but remarked he "often took the girls riding."

The investigation brought out that before its failure Palmer had sold all save one share of his stock in the Buggy company, and also threw some light on the so-called "velvet" payroll which was charged to J. Roache & Co. for advertising and carried as a company asset.

According to the testimony, it appears that nine men shared the "velvet" during the 12 months ending July 1st last. George B. Lay, Sr., received $12,000, Palmer $14,083.07, George B. Lay, Jr., and Frank Lay, each $18,783.31, George A. Dougherty $2,816.58, W. H. Cameron $1,035, Thomas Grant $1,049.98, J. C. Wilson $300 and James Reynolds $100, a total of $68,946.45.

Palmer explained the "velvet" payroll by saying that as the two Lay brothers took great interest in the business it was thought that they should be rewarded.

Palmer declared that everyone in the company knew that dealers' notes were being floated on the banks throughout the country and explained how they were negotiated. He admitted, however, he did not know how many notes were outstanding.

He also professed surprise that the account of E. F. Gerber, of Pittsburgh, had been permitted to run up to more than $300,000. He maintained that he did not know whether or not George Lay was a director in Gerber's company.

Palmer acknowledged that he compiled a statement as of June 30, 1913, showing the company's total assets to be $2,689,053 and liabilities $881,441, but maintained that he obtained the figures from department heads. Palmer also acknowledged that he borrowed money on the strength of that statement, although, two months later, it was shown that the liabilities amounted to more than $3,000,000.

It also was brought out that a Michigan car had been given to the Mayor of Kalamazoo, but for exactly what reason is not made clear, Palmer stating that it was understood that the gift had been as compensation for some services the mayor had rendered.

When George B. Lay, Jr., was called as a witness he failed to appear, despite several days' effort to locate him. His brother explained that the referee had given George permission to leave Kalamazoo to seek work, but the prober's inquiry brought out that George had sought the work in Lexington, Ky., where the Grand Circuit trotting races are being held, and intimated that he went there to "play the ponies."

Michigan Personal Property Disposed Of.

In the United States Court in Grand Rapids on Tuesday last, 21st inst., Judge Sessions confirmed the bid of Samuel L. Winternitz & Co., of Chicago, for the tangible personal property of the bankrupt Michigan Buggy Co., of Kalamazoo.

According to the terms of the bid, the Chicago firm guarantees creditors $225,000 from the auction sale it will conduct, from which it will deduct a commission of 12½ per cent. The property to be disposed of does not include real estate or plant.

E. F. Gerber, the Pittsburgh agent for the Michigan car, made another attempt to acquire the plant in Kalamazoo, this time offering $225,000 for the personal property and $40,000 for the real estate, but, like all his previous bids, the offer was refused.

STANDARD ROLLER BEARING FINANCIALLY EMBARRASSED

Unable to Meet Obligations, Big Philadelphia Company Goes Into Receivership—Action Taken to Conserve the Assets.

Inability to pay the interest or principal on its floating indebtedness, coupled with the refusal of a New York bank to renew a maturing loan, and the threatening attitude of other creditors, caused the Standard Roller Bearing Co., of Philadelphia, to be placed in the hands of receivers yesterday, 22nd inst.

Action was taken by the First National Bank of Philadelphia, a creditor to the extent of $3,000. Judge Thompson, in the United States District Court in Philadelphia, named Robert S. Woodward, Jr., president of the company, S. Laurence Bodine and Thomas L. Gaskill as the receivers, under a bond of $160,000.

Judge Thompson's action followed similar procedure in the Federal court in Camden, N. J., the previous day, the company being a New Jersey corporation capitalized at $10,000,000.

According to the bill of complaint, the assets of the Standard company are in excess of its liabilities and if properly conserved under receivership proceedings the creditors will be paid in full and a substantial residue be left for the stockholders.

The receivers, of course, will continue to operate the plant, and it is promised that there will be no interference with the production of either ball or roller bearings or Rudge-Whitworth wire wheels, which the company manufactures and markets through George W. Houk, Ltd., of Philadelphia.

The company's plant is an enormous one, employing approximately 1,000 men. It was organized in 1901 and in 1906 paid a dividend of 37 per cent.; in 1907 11 per cent., and in 1908 9½ per cent. on its common, since which time no dividends have been declared on that stock. Six per cent. was also paid on the second preferred stock from 1904 to 1908, when they ceased.

Harrises Likely to Get Cutting Assets.

When, for the third time, the assets of the bankrupt Cutting Motor Car Co., of Jackson, Mich., were offered for sale yesterday, 22d inst., Harris Bros., the Chicago housewreckers, bid $35,000 for the property, including book accounts. It was in the form of a guaranteed bid, the Harrises to receive 15 per cent. on all the assets yield and the creditors to share the excess. It is probable that the court will confirm the bid on Saturday.

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NO INQUISITIVE MINORITY AT INTERNATIONAL MEETING

Stockholders of Investigating Turn of Mind Barred on Technicality—The $1,200,000 Mortgage Deferred by Adjournment.

They are having a hard time of it raising the $1,200,000 necessary to keep the International Motor Co., of New York, afloat. To raise the money, it is the intention to place a mortgage on the property, but the minority stockholders are displaying an uncomfortably inquisitive disposition and, as a result, the mortgage has not yet been placed.

A meeting of the stockholders designed to authorize the directors to negotiate the loan occurred on Tuesday last, 21st inst., but it proved abortive, the majority interests deeming it advisable to adjourn until tomorrow, Friday.

According to J. Dupratt White, counsel for the management, the adjournment was for the purpose of obtaining a small percentage of assents additional to those already had in order to authorize the proposed $1,200,000 loan. According to Vernon Munroe, secretary of the company, the adjournment was taken because the minority holders of voting trust certificates for preferred stock had "brought newspaper men with them to the meeting."

Some of the International stockholders believe that the publicity will prove an uncommonly good thing for the big corporation and accordingly, it is stated, they fortified several newspaper men with at least one share of their holdings in order that the desired publicity might be gained. It turned out, however, that the newspaper men, like a number of other stockholders who desired to attend the meeting, are technically not stockholders but merely owners of voting trust certificates. On this technicality, they were denied admission to the meeting.

The trustees who hold the voting trust certificates are C. P. Coleman, former president of the company, M. E. Kern, who is understood to be acting for the Mack interests, and H. K. Pomroy. Neither Coleman nor Pomroy, however, were present at Tuesdays' meeting, the former being represented by his successor, John Calder, and Pomroy by his brother, H. A. Pomroy.

The minority stockholders held a conference before the corporation's meeting occurred, at which serious allegations were made against the International management. These stockholders believe that a probing of the terms of the original consolidation of the Saurer and Mack companies, out of which the International company was formed, will disclose an interesting state of affairs. They also decided to demand an appraisal of the International assets to show both the actual conditions at the time the merger was brought about and the exact manner of the distribution of the capital stock. Instead of being able to voice their demands, however, the minority stockholders were, as stated, not permitted to participate in the corporation's meeting, and later torrid threats were made to take the matter into court.

A committee consisting of William E. Butler, George F. Hurd and M. E. Kern was appointed by the minority to represent it in the matter. The minority holders of certificates have entered a protest through the secretary, Mr. Munroe. They explain that they were admitted to previous meetings held last week and the week preceding, and they could not understand why they should be barred from Tuesday's session.

It was said that the company now holds consents representing about 68 per cent. of the preferred stock, while the minority claims to have some 26 per cent. pledged to contest the placing of a $1,200,000 mortgage on the International property. The company declares it has sufficient additional proxies promised to carry the proposed loan; and, this being so, the matter may be settled Friday. According to one statement, the Philadelphia interests, holding 2,000 shares, may agree to side with the management, it they are given representation on the board.

Stephenson Truck Gives up the Ghost.

Three creditors, on Tuesday last, 21st inst., more or less mercifully took the necessary steps toward putting an end to the Stevenson Motor Truck Co., of Milwaukee. On that day, they filed a petition in bankruptcy, the company previously having acknowledged its inability to meet obligations and agreeing to the proceedings. The petitioning creditors are the Whitney Mfg. Co., of Hartford, the Whittaker Mfg. Co., of Chicago, and a Milwaukee coal company whose claims aggregate $800.

As the company had been inactive for several months, its failure will cause no surprise. It never recovered from the effects of the adverse decision rendered in its suit against the J. I. Case T. M. Co., of Racine, for $150,000 damages. That suit grew out of a contract whereby the Case interests agreed to purchase the Stevenson property if certain conditions were fulfilled at the end of a year. When the Case people maintained that the conditions had not been fulfilled, and repudiated the contract. Stevenson resorted to law but lost out. The factory had not since been operated.

PACKARD ENLARGES CAPITAL; YEAR'S INCOME $2,157,000

Statement Disclosed at Annual Meeting Shows Increase of $3,000,000 in Assets — Officers Reelected — Figures for 1912 and 1913.

In accordance with the program of the meeting of its stockholders, held in Detroit Thursday last, 16th inst., the capital stock of the Packard Motor Car Co. has been increased from $10,000,000 to $16,000,000. Of the new issue, $3,000,000 is preferred and $3,000,000 common, making the total capital $8,000,000 of each class of stock.

Of the new common, $2,000,000 will be distributed among the present holders of the company's common stock, making the equivalent of the 40 per cent. dividend—the first in four years. The remaining $1,000,000 will be held as treasury stock to meet future requirements, while the $3,000,000 new preferred will be retained to take up the company's issue of $3,000,000 5 per cent. gold bonds due December 1, 1916, or for such other use as may be hereafter determined.

At Thursday's meeting, all of the present officers were reelected, as follows: Henry B. Joy, president; Russell A. Alger and S. D. Waldron, vice-presidents; Philip H. McMillan, secretary and treasurer; Alvan Macauley, general manager. The other directors are Richard P. Joy, Fred M. Alger, Truman H. Newberry and J. W. Packard. The annual statement of the Packard company for the fiscal year ending August 31st was made public at the time of the meeting. It was accompanied by a review by President Joy, who says "The year has been most gratifying to our executive staff. Business has held up well, even considering our delayed output, in the fall a year ago, and the trouble caused the shop by the Ohio floods. The year's profits have been fair. Not in my judgment as great as the capital invested or the volume of sales should yield, but our whole condition is better and with even a like volume of business this coming year the profits should be more favorable. Our increased capital requirements show chiefly in enlarged inventories in trucks, cars, bodies and service stock and are the main changes noticeable as the year's result."

President Joy calls attention to the fact that the "company has not a dollar of floating debt except current bills, which are punctually discounted and promptly paid."

For the first time the output of the Packard company since it was removed from Warren, Ohio, to Detroit, in 1903, is made

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public, as follows: 1903-4, 192; 1904-5, 481; 1905-6, 768; 1906-7, 1,188; 1907-8, 1,470; 1908-9, 2,669; 1909-10, 3,990; 1910-11, 3,047; 1911-12, 3,617; 1912-13, 3,994; total, 21,416.

The disbursements during the ten years aggregated $79,680,565.78, the largest item being $25,456,344.68 for payroll.

The financial statement shows the company's assets to be $17,339,848.10, as against $14,663,298.86 at the end of the 1912 year. Its liabilities for the corresponding period were $14,333,591.88 and $13,464,515.04, respectively.

The reports for the two years were not presented in exactly the same form, so that detailed comparison is not possible. For instance, last year the gross sales were totaled at $14,613,057, whereas this year, instead of reporting gross sales, accounts receivable and receipts from all other sources were reported as amounting to $18,606,752, which compares with $17,328,472 last year.

In 1912 the company's gross earnings which are not given this year, were $3,412,862, but the net income figures out at $2,157,472. Cash on hand at the end of the 1912 fiscal year was $1,030,513.95; this year it was $1,374,951.12. The surplus also has been increased, from $198,783.82 to $3,006,256.22.

Of the assets, plant and equipment represent $5,264,950, and raw material, work in progress and finished vehicles $8,136,024.99, which is the largest separate increase, the stock on hand last year representing a valuation of $5,351,217.23.

It will be recalled that in making up its assets last year the Packard company took heroic action and reduced the book value of its rights, privileges, franchises, patents, etc., from $3,274,958.89 to the nominal sum of $1, at which figure they are now carried.

Of the liabilities, $10,000,000 is represented by capital stock and $3,000,000 by debenture notes. Accounts payable total $1,154,874.94.

The statement, and a comparison of the 1912 figures, are as follows:

RECEIPTS AND DISBURSEMENTS.

		Aug. 31, 1913	Aug. 31, 1912
Cash on hand September 1st, 1912		$1,030,513.95	
Receipts During Fiscal Year:			
From accounts receivable	$15,687,738.96		
From all other sources	2,919,013.38	18,606,752.34	
Total		$19,637,266.29	$17,328,472.51
Disbursements During Fiscal Year:			
For accounts payable	$15,888,362.16		
For all other accounts, including all taxes	2,373,953.01	$18,262,315.17	16,464,930.09
Cash on hand August 31st, 1913		1,374,951.12	1,030,513.95
Total		$19,637,266.29	$17,495,444.04
Cash on hand Sept. 1, 1911			106,971.53
			$17,328,472.51

BALANCE SHEET AS AT AUGUST 31, 1913.

Assets:

	Aug. 31, 1913	Aug. 31, 1912
Plant: At Cost Less Depreciation—		
Real estate—at cost	$285,460.21	$285,312.49
Buildings	2,063,784.48	2,084,865.81
Machinery	1,137,276.24	1,145,381.22
Equipment—Boilers, engines, generators, motors, elevators, shafting, etc	1,039,491.08	1,041,459.64
Fixtures, including office furniture	290,041.89	245,756.15
Tools	250,000.00	250,000.00
Construction work in progress	14,025.38	30,803.34
Development—Drawings, patterns, models, etc.	180,870.00	138,000.00
Rights, privileges, franchises and inventions	1.00	1.00
Total Plant—at cost less depreciation	$5,260,950.28	$5,221,579.65
Investment in branch selling companies	1,481,893.61	1,446,079.02
Investments—		
$41,000.00 bonds—Chicago and North Western Ry. Co.—at cost	38,232.50	38,232.50
Stock option contracts with employes	42,500.00	112,200.00
Inventories—		
Raw material, work in process and finished vehicles	8,136,024.99	5,351,217.23
Current Assets—		
Cash	1,374,951.12	1,030,513.95
Vehicles in transit to dealers	191,724.05	340,090.27
Due by branch selling companies	411,761.32	672,136.23
Accounts receivable	187,708.20	132,290.80
Bills receivable	60,261.16	188,095.03
Expenses paid in advance	153,840.87	130,864.18
Total	$17,339,848.10	$14,663,298.86

Liabilities:

	Aug. 31, 1913	Aug. 31, 1912
Capital Stock: Authorized and Issued—		
Common—50,000 shares of $100.00 each	$5,000,000.00	$5,000,000.00
Preferred 7% cumulative—50,000 shares at $100.00 each	5,000,000.00	5,000,000.00
Total Capital Stock	$10,000,000.00	$10,000,000.00
Five per cent. gold debenture notes—due December 1, 1916	3,000,000.00	2,000,000.00
Accounts Payable—		
Invoices, accrued pay roll, vouchers not due, deposits on vehicle orders, etc.	1,154,874.94	1,175,710.33
Reserves for general purposes	178,716.94	288,804.71
Surplus—		
As at August 31, 1912 (and at August 31, 1911)	1,198,783.82	2,984,021.81
Net income for year to August 31, 1913, after deduction of depreciatnon on plant assets and interest on debenture notes	$2,157,472.40	
Less: Dividend on preferred stock	350,000.00	2,182,376.20
	1,807,472.40	
Surplus as at August 31, 1913 (and at August 31, 1912)	$3,006,256.22	1,198,783.82
	$17,339,846.10	$14,663,298.86

Shock Absorber Maker and Seller Fall Out.

The Aristos Co., of New York City, which markets Mondex shock absorbers, and the United States Indestructible Gasket Co., which has manufactured some of the Aristos product, have fallen out; as a result, the latter company this week filed suit in the Supreme Court for New York county and secured an attachment for $13,568.75, but this was later released on bond. The gasket company claims that under a contract to manufacture 4,600 sets of shock absorbers with 7½-inch arms at $5 a set, 100 sets with 9-inch arms at $8.90 a set and 32 racing sets at $6.75 a set, it made 881½ sets between May 1, 1912, and May 1, 1913.

On this work it claims $4,175 was paid, leaving a balance of $657.50. It is also charged that the Aristos Co. repudiated the contract April 11, 1913, all of which has damaged the gasket company in the amount asked.

Evans Sells Lots to Acquire Capital.

Having become possessed of 341 lots of real estate, in order to obtain more of the wherewithal with which to erect its factory, the Evans Motor Car Co., of Nashville, Tenn., is auctioning 100 of the lots, giving as a bonus a $100 share of stock to each of the first 100 purchasers. Sales of the real estate are being made on the installment plan, the Evans company binding itself to refund the purchase price if it fails to build its plant "in the earliest possible time."

Handley Reelected American Motors' Head.

At the annual meeting of the American Motors Co., of Indianapolis, last week, officers were elected as follows: J. I. Handley, president and general manager; Frank E. Smith, vice-president; V. A. Longaker, chairman and treasurer; J. D. Bright, assistant treasurer; J. E. Kepperley, secretary. The directorate is made up of Messrs. Handley, Smith, Longaker, Kepperley and D. S. Menasco.

New Jersey Jobbers "Invade California."

Van Deman & Wainwright, of Newark, N. J., who market two special brands of tires—the Peerless and Bulldog—have opened a branch in Los Angeles, Cal., at 1012 South Hill street. It will be in charge of A. J. Reynolds, who previously traveled Pennsylvania territory for the Newark tire firm.

Receiver Named for Dayton's Busted Truck.

David Dunwoodie has been appointed receiver for the Dayton Auto Truck Co., of Dayton, Ohio, which, on the 11th inst., filed a voluntary petition in bankruptcy, as reported in last week's Motor World. The court authorized him to complete and dispose of the trucks on hand.

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The Week's Incorporations

Portland, Me.—Doughty Tire Co., under Maine laws; to manufacture, prepare and deal in all kinds of tires, rubber goods, etc.

Cleveland, O.—Mutual Motor Stores Co., under Ohio laws; authorized capital, $50,000. Corporators—E. M. Goldring, M. West, C. F. Taplin.

Chicago, Ill.—Longwood Automobile Co., under Illinois laws; authorized capital, $12,000. Corporators—A. B. Shaw, W. K. Pattison, R. E. Baker.

Chicago, Ill.—Forest Motor Livery, under Illinois laws; authorized capital, $5,000. Corporators—Hanson Kluever, Alfred O. Baker, Frederick Kluever.

Montreal, Can.—Cadillac Motors, Ltd., under Canadian laws; authorized capital, $50,000; to manufacture motor cars. Corporators—F. G. Bush, H. W. Jackson and others.

Brownstone, Ind.—Hackendorf & Robertson Garage Co., under Indiana laws; authorized capital, $3,000. Corporators—Frank Hackendorf, Charles F. Robertson, Cora M. Robertson.

Montreal, Can.—Kelly-Springfield Tire Co., Ltd., under Canadian laws; authorized capital, $5,000; to manufacture rubber tires. Corporators—W. R. Hastings, Robertson Fleet and others.

Aurora, Ill.—Thomas Dunham Co., under Illinois laws; authorized capital, $2,500; to manufacture motor specialties, etc. Corporators—Thomas W. Dunham, Lee Mighall, Harvey Gunsul.

Mount Vernon, N. Y.—Chester Hill Motor Car Co., under New York laws; authorized capital, $1,000. Corporators—Arthur Levine, 118 West 1st street; Samuel Levine, 103 Prospect avenue.

Bridgeport, Conn.—Aurora Vulcan Co., under Connecticut laws; authorized capital, $250,000; to manufacture automobile supplies. Corporators—S. Sherwood Day, H. N. Billings, Rita K. Hall.

Lewiston, Mont.—Lewiston Mfg. Co., under Montana laws; authorized capital, $40,000; to manufacture puncture-proof compound for automobile tires. Corporators—J. J. Mayne and others.

Hartford, Conn.—John J. Roche Co., under Connecticut laws; authorized capital, $50,000; to deal in motor cars and motor car supplies. Corporators—John J. Roche, Carroll F. Roche, Henry W. Nichols.

Rochelle, Ill.—Dexter Stocking Co., under Illinois laws; authorized capital, $5,000; to manufacture and deal in motor cars, accessories, etc. Corporators—Dexter Stocking, Thad M. Graves, Elmer E. Holmes.

Buffalo, N. Y.—Star Motor Delivery Co., under New York laws; authorized capital, $20,000. Corporators—John B. Corcoran and William H. Corcoran, both of 760 Ellicott square; Richard H. Connor, 199 Pearl street.

Oneida, N. Y.—Oneida Motor Car Co., under New York laws; authorized capital, $10,000. Corporators—Frank E. Petrie, 75 Broad street; Eugene P. Aubeur, 105 Elizabeth street; Frank H. Aubeur, 33 Lenox avenue.

Milwaukee, Wis.—Robinson Auto Heater Co., under Wisconsin laws; authorized capital, $25,000; to manufacture a device for heating motor cars by utilizing exhaust gases. Corporators—J. W. Robinson and H. L. Kellogg.

Cleveland, O.—Universal Carburetter Co., under Ohio laws; authorized capital, $10,000; to manufacture and deal in carburetters. Corporators—George A. Enyon, Frank H. Pelton, I. H. Bollan, Norton McGiffin, F. M. Treadway.

Buffalo, N. Y.—Oakland Distributing Co., under New York laws; authorized capital, $20,000; to conduct a general motor vehicle business. Corporators—Fredereick Baton, 799 Bird avenue; Thomas F. Donohue, Eggersville; William G. Grey, Buffalo.

Elgin, Ill.—Auto Service Co., under Illinois laws; authorized capital, $3,000,000; to conduct a motor livery service, deal in motor cars and do a general transfer and storage business. Corporators—Fred Hoagland, Elmer A. Sowers, Harvey King.

Charles City, Ia.—Western Motor Appliance Co., under Iowa laws; authorized capital, $25,000; to manufacture appliances and attachments for gas, gasolene and kerosene engines. Corporators—George C. Hintz, William Butz, W. J. Frevert, H. E. McCray.

New York, N. Y.—Greater New York Automobile Trucking Co., under New York laws; authorized capital, $10,000. Corporators—Leo Lang and Lena Lang, both of 185 Hemlock street, Brooklyn; Joe Yokel and Bertha Yokel, both of 545 West 111th street.

Buffalo, N. Y.—Auto Electric Equipment Co., under New York laws; authorized capital, $15,000; to manufacture electric generating machinery and appliances. Corporators—Edward W. Werick, Charles H. Werick and Fred C. Schoenthal, all of Buffalo.

New York, N. Y.—Flexible Rim-Tire Co., under New York laws; authorized capital, $25,000; to manufacture patented tires for motor vehicles, etc. Corporators—C. Elmer Clapp, 181 West 75th street; Alpheus H. Fayeur, 43 Cedar street; Ernest G. Ofeldt, Nyack.

New York, N. Y.—Suffolk Lubricating Oils & Gasolene Co., under New York laws; authorized capital, $1,000. Corporators—Sol Namorich, 591 Bedford avenue, Brooklyn; Louis Mannorick, 3-5 Gouvenour street; Anna Abramson, 591 Bedford avenue, Brooklyn.

New York, N. Y.—John M. Brisben Co., under New York laws; authorized capital, $26,000; to conduct a general motor vehicle business. Corporators—Thomas F. McMahon, 1402 Broadway; John M. Brisben and William H. Clover, both of 20 West 63rd street.

New York, N. Y.—Schildwachter Automobile Co., under New York laws; authorized capital, $30,000; to conduct a general motor vehicle business. Corporators—Augustus Linden, 414 West 120th street; Christian W. Schildwachter, 45 East 127th street; Charles G. Schildwachter, 63 East 128th street.

Changes in Capitalization.

Muncie, Ind.—Muncie Gear Works, to $500,000.

Racine, Wis.—Harvey Spring Co., to $300,000.

Milwaukee, Wis.—Wisconsin Motor Co., to $150,000.

St. Louis, Mo.—St. Louis Taxicab Co., from $50,000 to $25,000.

St. Louis, Mo.—Electric Garage & Service Co., from $2,000 to $15,000.

Cincinnati, O.—Bond Hill Auto Service Co., from $2,000 to $5,000.

Cleveland, Ohio—Buckeye Motor Trucking Co., from $1,000 to $25,000.

Cleveland, Ohio—Cleveland Rotary Motor Co., from $1,000 to $100,000.

New York, N. Y.—Allied Motor Accessories Co., from $10,000 to $140,000.

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KRIT CHARGES DEALER WITH SLANDER; DEMANDS $10,000

Claims Oklahoma City Tradesman Made Damaging Statements—Attempted to Influence State Fair Visitors Against Krit.

Because of slanderous and otherwise damaging statements which it is alleged he has made, J. T. Wheatly, its former agent in Oklahoma City, has been made the defendant in a suit brought by the Krit Motor Car Co., of Detroit, for $10,000. Of this amount, $5,000 is asked for injury to business and the other $5,000 for punitive damage.

According to the complaint, the Krit was handled in Oklahoma City by Wheatly and John L. Sharp, as copartners, Wheatly, however, representing another line of cars on his own account. It was during the State Fair, October 2nd, 3rd and 4th, at which both lines were exhibited, that Wheatley is alleged to have made the slanderous statements, the names of those to whom he made them being given in the complaint.

Among other things, it is charged that Wheatly declared that the Krit creditors were dissatisfied with the terms of the reorganization which had been effected and that the company had been thrown into the hands of a receiver; also that it had an overstock of cars and had discontinued all save two of its branches, which meant that anyone purchasing a Krit car would be unable to get repair parts therefor.

Apparently the statements were made by Wheatly in an endeavor to make sales of the car he was handling in competition with the Krit. Immediately the information was conveyed to the Krit company, in Detroit, it lost no time in instituting suit.

Suit Follows Repudiation of Contract.

Because the Pennsylvania Rubber Co., of Jeannette, Pa., refused to recognize the transfer of a crude rubber contract from the New York Commercial Co. to Heidelbach, Ickelheimer & Co. suit was filed against it this week in the Supreme Court for New York county by the last named concern for $2,489.56. The Pennsylvania had contracted with the New York Commercial and when the latter went into bankruptcy the trustee transferred a contract for 17,340 pounds of rubber to the company which is suing.

Heidelbach, Ickelheimer & Co. tendered the delivery of the rubber, but the Jeannette company refused it; it was then sold for $12,212.83 to another buyer, whereas under the contract the Pennsylvania Rubber Co. would have paid $14,471.05. The difference between these two figures and an added expense of $231.34 makes up the amount asked. The complainant sues under the name of its several members, who are Alfred S. Heidelbach, Henry R. Ickelheimer, Alfred Lichtenstein and Charles Einsiedler.

Stepney and Rutherford Friends Again.

The suit and cross suit which were filed in the Supreme Court for New York county because of a disagreement by the Rutherford Rubber Co., of Rutherford, N. J., and the Stepney Tire & Rubber Co., of New York City, over a tire contract dated November 22, 1911, were settled and discontinued this week; the contract called for the sale of 10,000 low-priced tires to the Stepney company and a dispute arose over the payment.

The Rutherford company filed the first suit, asking for $3,789.92 as an unpaid balance, and the Stepney company replied with the statement that all the tires delivered were not worth more than $10,000, that they were billed at $43,376.81 and that inasmuch as $40,836.31 was paid, full value was received by the Rutherford company.

Later the Stepney company filed a cross suit, making a modest claim for $72,923 which it declared was due because of incurred expenses, lost profits and other items attributable to defects in the tires.

Franklin Closes Last of its Branches.

Pursuant to its policy of closing its factory branches, the Franklin Automobile Co., of Syracuse, N. Y., disposed of its two remaining branches last week, turning the Chicago branch over to Frank H. Sanders and the Cincinnati branch to Newman Samuel; Sanders has been with the Franklin sales department for ten years, during which time he managed several different branches; Samuel has been a salesman in the Cincinnati branch for two years and for five years prior thereto was the company's St. Louis dealer. The Franklin company opened its first branches in 1906, in Chicago and Boston, and the list at one time totaled 13, the others being in New York, Pittsburgh, Baltimore, San Francisco, Cincinnati, Albany, N. Y., Rochester, N. Y., Buffalo, Cleveland, Syracuse and St. Louis

Lowe Makes Answer in Barber Plug Suit.

Denials that William Barber, of Brooklyn, achieved anything worthy of note when he patented a spark plug June 26, 1903, is the substance of the answer to his suit filed this week in the United States District Court for the Southern District of New York by the Lowe Motor Supplies Co., Inc., of New York City; Barber claims a basic patent on the two-piece insulation used in several plugs, patented nuder the number 732,032.

BOSCH-HONOLD PATENT MAY INVOLVE CYCLECAR MAKERS

Warning Issued that it Controls Basic Rights to Magneto Ignition for Two-Cylinder V-Type Motors —What its Claims Include.

If they heed the warning issued by the Bosch Magneto Co., other manufacturers of magnetos, cyclecar manufacturers and near-manufacturers of cyclecars will pause and consider patent No. 974,967, issued to G. Honold, November 18, 1910. The patent is owned by the Bosch company and is claimed to control practically all successful forms of magneto ignition for two-cylinder gas engines of the so-called V-type. The two claims of the patent on which the Bosch people lay most stress are as follows:

"The combination of a dynamo electric generator having means for producing a plurality of substantially equal maximum rates of change of flux at alternating longer and shorter intervals, of ignition circuits arranged to be energized by said changes of flux, and two explosive engines having igniters within the ignition circuits and arranged in intersecting planes.

"The combination with two explosive engines having the axes of their cylinders inclined to each other, said engines being provided with igniters, of an electric generator having its armature driven by and at a fixed speed with relation to the engine, and having generator windings, means for producing an intermittent maximum rate of change of flux through the generator coils at alternately longer and shorter angular intervals between the times of igniton and ignition circuits including the generator windings and the respective ignition devices of the engine, whereby a maximum voltage is produced at the igniter of each engine at the time of ignition."

The warning issued by the Bosch people implies that prompt action for infringement will be instituted unless its rights are respected.

McGraw Declares 10 per Cent. Dividend.

At its annual meeting last week, the McGraw Tire & Rubber Co., of East Palestine, Ohio, reduced the number of its directors from 15 to 11 and declared a dividend of 10 per cent. The directors who remain after the reduction are as follows: E. C. McGraw, Lenore H. McGraw, R. W. McGraw, John Morgan, R. F. Taggart, L. M. Kyes, J. C. Chamberlain, F. H. Ray, J. C. Chaplin, J. S. Wilson. They in turn reelected the following officers: E. C. McGraw, president; L. M. Kyes, secretary; R. B. Taggart, treasurer.

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In the RETAIL WORLD

A. R. Castle & Co., of Britt, Ia., are about to erect a new garage.

I. B. Bush, of Parkersburg, W. Va., is about to build a garage.

The Seabury-Carlson Co., of Logan, Ia., is about to build a new garage.

J. R. McGiffert, of Duluth, Minn., plans to build a garage on 24th street.

Dunnard & Cook, of Ceylon, Minn., will build a garage; the estimated cost is $5,000.

L. B. Shaw, of Riddlesburg, Pa., has opened a garage; it is located on 4th street.

The El Paso (Tex.) Garage has opened a new garage; it represents an expenditure of $10,000.

The Central Motors Co., of Owensboro, Ky., is erecting a garage; Elmer Little will manage it.

Clinton Davis, of Tipton, Ia., has secured an interest in the Northwestern Garage in that town.

H. J. Wilson has opened salesrooms in Emmetsburg, Iowa. He has the Studebaker line.

Harvey Hadley and Newton Poindexter, of San Francisco, plan to open a garage in Bend, Ore.

A new garage is being erected in Milledgeville, Ga. It will be styled Milledgeville Garage.

Cyrus G. Deer, of Cumru, Pa., has let the contract for a two-story garage; the cost will be $5,000.

Howard S. Johnson, of Summit, N. J., proposes to build a garage; the site is on Speedwell avenue.

Seeley Bros., of Rensselaer, N. Y., plan to build a garage on Ferry street; the estimated cost is $10,000.

W. E. Cady & Son, of Corry, Pa., have secured bids on a garage; it will be erected on East South street.

C. W. Hager has admitted R. H. Sanborn to partnership in the Alhambra Original Garage in Alhambra, Cal.

E. M. McBrier, of Montclair, N. J., plans to erect a garage at 203 South Mountain avenue; it will cost $3,500.

The Duluth Auto Tire Repair Co. has entered the trade in that Minnesota city; Louis Kazmier is the proprietor.

The Gay-Fourth Tire Repair Co. has opened a new shop in Columbus, Ohio. It is located at 139 East Gay street.

R. L. Oakley, formerly of Detroit, has been made Oregon distributer of Commerce trucks; he will locate in Portland.

Ray Carson, of Iowa Falls, Ia., has sold his garage business to Voss & Conard. It is located on South Dubuque street.

New Diamond Garage is the style of a new business in Sistersville, W. Va. It is located in the Hippodrome building.

Horace Rainey, of Columbia, Tenn., plans to erect a garage and salesrooms, 70 x 125 feet; the site is on South Garden street.

Raymond Bros. of Waterbury, Conn., have let the contract for a new garage; they will build at 453 West Main street.

Pirtle & Co., of Phoenix, Ariz., have secured permission to build a new garage on North Central avenue; it will cost $10,000.

Robinson & Co. is the style of a new dealership in Des Moines, Iowa. The company has the State agency for the Allen car.

The J. T. Stubbs Co., of Providence, R. I., has taken over the building at 75 Mathewson street; the company handles Hendersons.

The garage firm of Jenkins & Craig, of Stanhope, Ia., has been supplanted by a new combination under the style Craig & Olsen.

The Morristown Automobile School, of Morristown, N. J., will erect a garage; it has purchased a site at South and Boyken streets.

J. W. Leakin, of Baltimore, Md., has secured permission to erect a garage, 60 x 138 feet, on Cathedral street; it will cost $27,000.

Black & Kirkpatrick, of Rockville Center, Iowa, have sold their garage to E. L. Smith and Ben Obye; the latter will continue the business.

Clayton Jackson has purchased the interest of R. H. Munford in the Escalon (Cal.) Garage; the style now is Mead & Jackson.

Guy Johnson, of Morrison, Ill., is installing his garage business in the Morrison Specialty Co.'s building, which he recently purchased.

Harry Crouch has taken over the stock, garage and business of the Nevada Auto Co., of Nevada, Ia. He will handle Buick and Studebaker cars.

E. P. Madeley, of Rogers, Tex., has purchased from R. B. Lewis the Rogers Garage; he exchanged a farm for the garage and a parcel of real estate.

C. E. Warren, proprietor of the Red Apple Garage in Wenatchee, Wash., is to have a new garage; the site selected is located on South Wenatchee street.

The Sweeten Automobile Co., of Philadelphia, Pa., has awarded the contract for a one-story garage, 55 x 100 feet; it will build at 3430 Chestnut street.

Frank J. Langorio, of Pittsburgh, Pa., has been granted authority to build a two-story garage on Monitor street; the application states that the cost will be $17,500.

The Eastern Motor Co., of Atlantic City, N. J., has taken possession of new and larger quarters at 2720 Atlantic avenue; the company stocks Mercer, Overland and Paige cars.

R. R. Browne, formerly manager of the Erie Supply Co., of Toledo, Ohio, has branched out for himself; he has opened an accessory and supply store at 126 Erie street.

Albert C. Lusby has entered the trade in Los Angeles at 1200 South Olive street, in the building formerly occupied by the United Motors Co. He has the Abbott-Detroit agency.

The Block-Miller Hardware Co., of Lawton, Okla., has taken over the automobile business of R. T. McDuffie; it will be operated by J. M. Jones, of Oklahoma City, whose father recently purchased the Block interest in the hardware company.

J. L. Evans has purchased the interest of William Work in the Connellsville (Pa.) Garage; the other half of the business is owned by V. J. Clark, who retains his interest. An addition, 165 x 64 feet, will be erected, increasing the garage's capacity from 25 to 125 cars.

Frank P. Oswald, for three years vice-president and superintendent of the Overland agency in Grand Rapids, Mich., has entered business with John D. Hess, Jr. The latter recently secured the Kissel agency; the new business will locate at 21-23 Campau avenue.

The F. B. Stearns Co.'s branch in Cali-

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fornia having been incorporated and removed from San Francisco to Los Angeles, the Stearns business in Northern California has been taken over by the Argonaut Motor Sales Co., of San Francisco; the Argonaut company also stocks Abbott-Detroits.

The Hupmobile retail business in lower Michigan, including Detroit, has been taken oved by the Grasser Motor Co., of which J. M. Grasser is the head. This company has acted as Hupmobile distributer in Northwest Ohio and from now on will operate in both Toledo and Detroit.

P. A. Wagner, for 35 years in the real estate business in Spokane, Wash., and W. J. Schuh, formerly proprietor of the Iowa Auto & Garage Co., of Dubuque, Ia., have formed a copartnership and will open a garage and salesrooms in Spokane; they plan to erect a 10,000 building on the South Side. Schuh will be president and Wagner secretary.

The Archambault Motor Car Co., of Milwaukee, Wis., has been dissolved; E. J. Archambault, the proprietor, is a baseball club owner and will devote his time to other affairs. The garage and salesrooms at 177-79 Ogden avenue, where the company handled Lozier and Michigan cars, have been taken over by the Hughes Motor Car Co., the Apperson distributer in Wisconsin.

The Deeds & Hirsig Mfg. Co., of Nashville, Tenn., has dissolved; J. B. Deeds, as the J. B. Deeds Buggy Co., will handle the wagon and implement business and W. G. Hirsig will operate the Lozier and Paige-Detroit agencies which were a part of the company's business. Deeds retains the old location on Broadway and most of the employes; Hirsig removed to a new location on Broadway.

The Divine Motor Car Co., of 2430-32 Michigan avenue, Chicago, a Garford dealer, has been succeeded by a Garford branch under the style Garford Motor Car Co. The new company has taken over both the business and location. T. J. Edwards, formerly located at the Garford factory, is manager. E. C. Devine, head and founder of the company which bore his name, has retired from business and will spend the winter in California.

Recent Losses by Fire.

Harlinger, Tex.—J. H. Bailey; garage destroyed. Loss not stated.

Anderson, S. C.—A. L. Todd; garage destroyed by explosion. Loss not stated.

Los Angeles, Cal.—H. W. Hawley; garage, car and two motorcycles destroyed. Loss, $4,000.

Memphis, Tenn.—Southern Automobile Co., North 3rd street and Washington avenue; garage and 11 cars destroyed. Loss, $20,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

W. F. Meyer has been appointed manager of the Washington (D. C.) branch of the Motz Tire & Rubber Co., of Akron. His appointment is in the nature of promotion, Meyer having been identified with the Motz interests for some time.

F. E. Miles has been appointed purchasing agent for the Palmer & Singer Mfg. Co., of Long Island City, N. Y. Previously he served the Mais Motor Truck and the National Motor Vehicle companies, of Indianapolis, in a similar capacity.

John Yoke, who previously was connected with the Maxwell factory in Detroit, has been appointed manager of the Maxwell branch in Omaha, which is conducted under the style Maxwell Motor Sales Corporation. He succeeds J. M. Opper, resigned.

Robert M. Barker, for the past two years advertising manager of the Chase Motor Truck Co., of Syracuse, N. Y., has resigned to accept a similar position with the Palmer-Moore Truck Co. of the same city. Before going to Syracuse, Barker was for six years in the advertising business in New York City.

F. A. Robinson, chief accountant of the Packard Motor Car Co., of Detroit, has been promoted to the post of comptroller. In addition to his new duties, Robinson, who has been identified with the Packard company for four years, will be the direct representative and assistant to General Manager Macauley.

F. H. Hoover has been appointed Eastern district manager for the Woods Motor Vehicle Co., of Chicago, and will direct the affairs of the Woods electric in all territory east of Pittsburgh. Hoover, who previously was connected with the Whitten-Gilmore Co., of Boston, will make his headquarters in Philadelphia.

Pettit Goes from Cars to Trucks.

William S. Pettit, who has made an enviable reputation as advertising manager of the Studebaker Corporation for the past two years, has resigned to go into the truck business as sales manager of the Commerce Motor Car Co. of Detroit. Pettit's experience with the Studebaker Corporation extends over a period of three years, during which he has had ample opportunity to study the methods of such successful sales managers as George E. Keller, Paul Smith and E. R. Benson.

In his new venture Pettit associates himself with Walter E. Parker and H. B. Bennett, the same group of capitalists who own and control the Mexican Crude Rubber Co., with headquarters at Detroit, and who also own and operate the Hotel Cadillac, Detroit, which means that there are ample financial resources back of the Commerce company. They build a friction drive truck that has been notably successful. Pettit is not only one of the best liked but one of the sanest advertising men in Detroit's large colony.

To Organize New York State Dealers.

After several false alarms, the logical body to bring about a State organization of New York dealers finally has taken the work in hand, the Automobile Dealers' Association of New York City having voted to direct its efforts to that end.

According to the latest statistics, there are now 1,800 automobile dealers in the State, and it is believed that a large majority of them readily will join the State-wide organization which is in view. No date has yet been set, but it is almost certain that the meeting for the purpose will be held in Albany.

Apart from other considerations, it is believed that a State organization of the sort can wield considerable influence, not only to obtain favorable legislation but to prevent the introduction or passage of adverse laws.

Simpson Claims he Was Frozen Out.

Edward W. Simpson, who in the latter part of 1912 formed the Simpson Auto Supply Co. in Grand Rapids, Mich., and whose corporation subsequently passed through bankruptcy, is not satisfied with the present condition of affairs and his filed a suit asking that a receiver be appointed and that the company be dissolved. The bankruptcy led to a reorganization through which Julius and Emil Tisch entered the management of the business, and Simpson now claims that they have informed him that he has no further interest in the company.

Braender and Willis Hold Different Views.

A slight difference apparently exists between the views of the E. J. Willis Co., of New York City, and the Braender Rubber & Tire Co., of Rutherford, N. J., regarding a tire account between the two companies; at any rate, the Braender company this week filed suit in the Supreme Court for New York county, claiming that between January 27 and September 1, 1913, it furnished the Willis company with tires to the value of $35,643.46 on which the Willis company paid and received credit of $34,069.46, which leaves a balance of $1,574.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1091 Ford Bldg.
MAXTON R DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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THE POPULAR PRICED ELECTRIC CAR.

Why is there no such thing on the market as a popular priced electric pleasure car?

There have been expectations that proved "false alarms" on several occasions, but despite not a few reasons why there should be electrics purchasable at prices comparable to the prices of many gasolene cars, relatively high prices prevail. There is no question but that there is a field for such a vehicle. There are many who would prefer the quiet running and simplicity of operation of the electric if they could get the machine at the price of a "gas" car.

The ancient idea that an electric is able to run only a few miles before requiring a fresh charge has been exploded. Runs of 100 miles on a single charge are not uncommon, and the distance that can be covered in a day with the assistance, perhaps, of a "boost" during the lunch hour, is sufficient to satisfy enough people to form a purchasing class well worth considering. Recent trips, and others not so recent, have demonstrated that with a little forethought tours of almost any duration can be made without more trouble than with gasolene cars. And while makers of electrics never have attempted to build cars as fast as gasolene cars, the rates that can be attained are quite sufficient to satisfy reasonable people. An average speed of close to 22 miles an hour for the 250-mile run from Boston to New York, for instance, indicates a high maximum speed.

As to the problems involved in turning out popular priced electrics, there would seem no reason to believe that they are any more serious than those encountered, and effectually disposed of, in the production of gasolene cars. So far as frames, axles, wheels, steering gear, tires, springs and so on are concerned the two types are on an even footing, and the same is true of bodies. This leaves as the doubtful group the battery, motor and controller.

It is true that it costs a good deal to buy a single battery at retail. In fact, it would make a low priced electric look like a practically impossible proposition. But the same is true of the engine of a gasolene car. It simmers down to the question of quantity production and cost prices. The commercial law that one out of ten thousand costs amazingly less than one out of a hundred holds good with storage batteries as with anything else. As for electric motors, they are susceptible of quantity production methods that are most effective in reducing manufacturing costs.

As a matter of fact, it would seem that the only thing lacking to the production of a popular priced electric is someone with the "sinews of war" and the "nerve" to get into the business on a big scale. When he discovers himself he almost surely will be richly rewarded.

LOPPING OFF THE BRANCH HOUSES.

No trend in the merchandising of motor cars is more pronounced than that which points to the discontinuance of branch houses, which means, of course, leaving the sale of cars in the hands of local dealers. The number and importance of the manufacturers who have taken such action during recent months suggests many things, but none more strongly than that, with few exceptions, the territorial branch house is rarely a paying investment, or, at any rate, an investment that wears well or indefinitely.

Often the location of a branch house is necessary when proper representation cannot be found, or when it is desired to establish a particular car, or other exclusive article, in a particular market, and when the interests involved are sufficiently large or numerous the branch may endure; but, speaking generally, it is undoubted that many branches represent a very considerable duplication of headquarters' expense and effort and involve the use of more or less unnecessary red tape; and it is certain that the average dealer is always possessed of the notion that dealing directly with the factory carries with it benefits which he himself cannot specify but which he fancies exist.

While the economy that comes of saving duplicated effort and expense undoubtedly is the underlying cause of the recent discontinuance of so many automobile branch stores, there is no doubt that the several other factors all have to do with the case. The tendency is also an indication that many makers now realize that their interests are safe in the hands of dealers.

That cars and tires, however, are things apart, and like other separate but closely related wares, must be marketed along different lines, is evidenced by the fact that while car makers are discontinuing branches, tire manufacturers are increasing the number of their establishments of the sort.

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193 ACCESSORY MAKERS TO EXHIBIT AT NATIONAL SHOW

Ninety Unaffiliated Exhibitors to Mingle with the 103 M. A. M. Members —Tires Will Be There but the "Tire Group" Will Not.

Though nearly all of the better known tires and the proud names of their makers will be missing from the forthcoming National shows, due to the action of the "tire group" of the Motor and Accessory Manufacturers, Inc., tire manufacturers, nevertheless, will not be lacking, at least six of those not affiliated with that organization having booked space for the New York show in January next. They are part of the 90 unaffiliated accessory exhibitors to whom space has been alloted by the Automobile Chamber of Commerce. Added to the 103 M. A. M. members who will display, they bring the total number of accessory manufacturers booked for New York to 193. The 90 unaffiliated space holders are as follows:

Miller Rubber Co.; Howe Rubber Co.; Thermoid Rubber Co.; Coloumb Tire Import Co.; United & Globe Rubber Mfg. Co.; Newmastic Co.; National Rubber Co.; Essex Rubber Co.; Standard Woven Fabric Co.; Chas. O. Tingley & Co.; Baums Castorine Co.; Platt & Washburn Refining Co.; Ajax Trunk & Sample Case Co.; Asbestos & Rubber Works of America; H. P. B. Electric Co.; Thurber Rotary Starter Co.; English-Mersick Co.; R. I. V. Co.; Nonpareil Horn Mfg. Co.; Marburg Bros., Inc.; H. H. Franklin Mfg. Co.; Burg Auto Trunk & Specialty Co.; A. B. Arnold; Majestic Mfg. Co.; Julian H. Faw; American Taximeter Co.; A. & R. Justice Co., Inc.; Eclipse Machine Co.; B & L Auto Lamp Co.; W. H. Brown; Houpert Machine Co.; Silvex Co.; Detroit Steel Products Co.; Hawthorne Mfg. Co.; Ernest Flentje; Golde Patent Mfg. Co.; Perfection Spring Co.; Thos. Prosser & Sons; K-W Ignition Co.; L. J. Mutty Co.; Ralph Waldt; McQuay-Norris Mfg. Co.; United States Gauge Co.

Mayo Mfg. Co.; Brown Co.; Stevens & Co.; F. A. Baker & Co.; Northway Motor & Mfg. Co.; Crescent Motor Co.; Champion Spark Plug Co.; Cleveland Hardware Co.; Allan Motor Co.; Rushmore Dynamo Works; Rich Tool Co.; J. R. Ashley Co.; Wm. R. Laidlaw, Jr.; C. A. Willeys Co.; Model Gas Engine Works; P. Reilly & Son; Chas. E. Miller; Frazer Lubricator Co.; Peter A. Frasse & Co.; Jones Electric Starter Co.; Universal Lubricator Co.; Bock Bearing Co.; Fentress-Newton Mfg. Co.; International Metal Polish Co.; Fitzgerald Mfg. Co.; J. Eavenson & Son; Havoline Oil Co.; Johns-Manville Co.; Donnelly Motor Equipment Co.; David Kahnweiller's Sons; Cox Brass Mfg. Co.; Asch & Co.; Universal Shock Eliminator Co.; Eveland Engineering & Mfg. Co.; Bausch Machine Tool Co.; Motor Patents Co.; Pyrene Mfg. Co.; Emil Grossman Mfg. Co.; Rhineland Mch. Wks.; New York Coil Co.; J. Alexander Mfg. Co.; John T. Stanley; Metal Stamping Co.; Wayne Oil Tank & Pump Co.; Townsend & Co.; Aristos Co.; J. Sonneborne Sons, Inc.

New York Limits Truck Loads and Speeds.

Limitations of truck weights, speeds, treads and loads have been issued by Commissioner of Highways John N. Carlisle of the State of New York and became effective Monday, 20th inst. Penalties of from $10 to $100 are provided for violations of the regulations.

A limit of 800 pounds per inch of tire width is placed on all power vehicles unless the commissioner specifically grants an excess; 90 inches is the maximum tread on State and county roads for power vehicles except traction engines, which may have a tread of 100 inches; with a load of four tons no vehicle shall exceed 15 miles an hour; with a load of six tons, including the vehicle, the speed shall not exceed six miles an hour when steel tires are used or 12 miles when rubber or similar tires are the equipment; special permission must be secured to move a vehicle which with its load weighs more than 14 tons, and no more than eight tons shall be carried on any one axle. On traction and road engine wheels which are fitted with flanges, ribs, clamps, cleats, lugs or spikes, these projections must not be less than 2½ inches wide and 1½ inches high and so placed that not less than two cleats on each wheel shall be on the ground at all times, and the weight must be the same on all parts of the cleats.

Importers' Show Opened to American Cars.

Influenced, it is explained, by the enactment of the Underwood tariff bill, the Importers' Automobile Alliance, which fathers the Importers' Show held annually in the Hotel Astor, New York, has voted to throw open its doors in January next to a limited number of American cars. It is stated that five American applications already are in hand, of which number two already have been granted space in the Astor—the Simplex and the Fiat.

Carbon Remover Coming from Seattle.

H. L. Davies has organized the Oxygen Carbon Remover Co. in Seattle, Wash., for the purpose of manufacturing a device suggested by the title of his enterprise. Temporarily he is located at 305 East Pike street in Seattle.



*Indicates Sanction by A. A. A.

Oct. 15-25, New York City—Annual electrical exposition and electric vehicle show in Grand Central Palace.

Oct. 17-27, Paris, France—Annual automobile salon.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Oct. 25, Hutchinson, Kan.—Track racemeet under auspices of J. A. Sloan.

Oct. 27, San Marcos, Tex.—Track racemeet under auspices of F. Bradley and H. D. Story.*

Oct. 27-28, Chicago, Ill.—Annual Convention of the Electric Vehicle Association of America in Hotel La Salle.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 9-12, Shrevepeort, La.—Track racemeet under auspices of J. A. Sloan.

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

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ALCO INVESTIGATION BUMPS UP AGAINST "STEAM ROLLER"

"I Vote $30,000,000 of Stock," Says Sheldon, and Insurgents Are Flattened Out—But President Marshall Promises Information.

What usually happens to any man—or group of men—who holds less than 51 per cent. of the stock of any corporation happened to the minority stockholders of the American Locomotive Co. at the annual stockholders' meeting in New York on Tuesday, 21st inst.

The meeting was made momentous largely because of criticisms which followed the company's recent abandonment of its Alco automobile department, Isaac M. Cate being the most strenuous of the critics. At the meeting, Cate, however, represented but 950 shares of stock and, although several other stockholders joined in his demand for an investigation, they were flattened out when George R. Sheldon, the New York banker, voted $30,000,000 worth of stock in favor of the "insiders."

During the session it came out that a committee of investigation is already at work, but as its report is not ready, a demand arose for an independent investigation conducted by men not identified with the Locomotive company in any way. One of the stockholders proposed the appointment of a committee of which William R. Willcox, former chairman of the New York Public Service Commission, was to be the head, but Sheldon and his $30,000,000 worth of holdings quickly put an end to that suggestion.

President Marshall and ex-Governor Griggs, of New Jersey, the latter one of the present investigators, both declared themselves in favor of submitting the final report to the stockholders, but no assurance to that effect was given; in fact, President Marshall was reminded that several years ago a special committee had made a report on the company's recently abandoned automobile department, and although stockholders were promised copies of it none had ever reached them.

Among the questions that were asked of President Marshall were these: "Why it was necessary to take $3,500,000 from the profits of the company to make up the losses in the automobile department; whether it was a fact that a majority of the directors held very little stock in the company and that they were interested in other companies that sold material to the American Locomotive Co.; the reason for the sale of $900,000 of preferred stock of the company in 1907, just before the panic, and the purchase of an equal amount of common stock, and whether money could be saved if the offices of the company were moved to Schenectady."

President Marshall said he would answer the questions later.

One shareholder wanted to know what salaries were paid and the information was given. The president and one vice-president, it was said, got $25,000 and the other vice-president got $30,000. In good years, it was explained, there was a salary bonus which sometimes amounted to as high as 30 per cent.

It was announced after the meeting that the same board of directors had been elected.

American Cars Staged at Paris Show.

In at least one respect, the annual French Automobile Show, which opened this year on the 17th of October and will last 10 days, instead of opening during the first week in December and holding the boards for three weeks, is a great deal different from last year's exhibition, which uncovered three or four new, or nearly new, poppet-valveless motors; this year there is nothing new in the poppet-valveless line, and very little that is new in any other line. All told, there are upward of 700 separate exhibits, the number being about the same as last year, and, as usual, American manufacturers are well represented.

Almost as a matter of course, the Ford company has the largest foreign—to French eyes—exhibit, the whole Ford line, roadster, touring car and town car, being displayed in front of a background of enlarged photographs showing the immense Ford plant in Detroit from the inside and the outside. In the drawing for exhibition spaces, the Hudson representative was allotted stand No. 1 and the exhibit is so placed that it faces everyone who enters the Grand Palais.

Among the other American makers whose cars steadily are looming larger in the eyes of the French motoring public, the Cadillac company displays both cars and chassis, as do the Overland, Buick, Mitchell, Krit, and Packard companies, the latter having only one "2-38" model on exhibition, owing to the early opening of the show.

Garage Didn't Pay for its Gasolene.

Charles Stork and John Wilmarth, who trade in Brooklyn, N. Y., as the Park Hill Garage, are defendants in an action instituted this week in the Supreme Court for New York county by the Standard Oil Co. of New York; it is charged that between November 2 and December 31, 1912. the garage was furnished with supplies to the value of $688.45 on which but $100 was paid, leaving a balance of $588.45, for which the Standard asks.

HIGH COURT BARS CADILLAC AND ITS "COLLAPSED WHEEL"

Declines to Interfere and Hasten Litigation in Lower Tribunal—Action Brought by Car Owner for $40,000 Must Be Retried.

That "collapsed wheel case" in which the Cadillac Motor Car Co. is the defendant and E. Wells Johnson, of Amsterdam, N. Y., the complainant, must be retried in the United States District Court in Syracuse, N. Y. Efforts of the Cadillac company to hasten the litigation, which harks back to 1909, when the wheel of Johnson's car collapsed and injured him, proved futile this week when the United States Supreme Court declined to grant a writ of certiorari.

The suit was tried and a verdict of $10,000 given to Johnson, but Judge George W. Ray set this aside and directed a new trial; inasmuch as the case likely will be appealed whichever way it goes, the Cadillac company sought to have the verdict stand so that an appeal could be taken at once; wherefore the Cadillac company asked the Circuit Court of Appeals for an order compelling Judge Ray to rescind his order for a new trial. The Appellate Court denied this request and the matter was carried to the Supreme Court. The denial of a writ of certiorari means that the action must be retried; when the trial is ended an appeal from the verdict may be taken, but until then the case must remain on the calendar of the court in Syracuse. Johnson asks $40,000, claiming the Cadillac company is responsible for a defective wheel, and the action is said to have cost already about $15,000.

Double Fabric Erecting New Factory.

The Double Fabric Tire Co., of Auburn, Ind., which was visited by fire last spring, is erecting a new brick and concrete factory which will be ready for occupancy within 60 days. The building is 180 x 80 feet and will be thoroughly modern in every respect, including sprinkler system, etc. The equipment will include a calender and rubber mill and other machinery necessary for the manufacture of the Interlock inner tire.

Alliance Off, Gibson Turns to Rochester.

The Gibson Motor Car Co., of which C. E. Gibson is the moving spirit, and which some five months ago was reported to have acquired a factory site in Alliance, Ohio, evidently did nothing of the sort. It is now stated that it has about leased a building in Rochester, Pa., where Gibson resides and where much of the company's stock has been sold.

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NECESSITY FOR SAMPLE CAR

The Prospect Who Can't be Shown What He Came Miles to See Loses His Enthusiasm—Where Stock of Cars Would Have Doubled Sales.

An automobile merchant who is in the business of selling cars should have at least a sample of his wares on hand all the time—and, if possible, should carry a stock so that he is prepared to make immediate deliveries—often a big advantage over competitors.

The factory had been urging an Indiana dealer to carry a stock of cars. The dealer thought it was a clever scheme on the part of the factory to get his money tied up—and while he could have financed five or six extra cars without any great inconvenience he preferred to do business with two cars—one supposed to be his regular demonstrator and the other supposed to on his floor to show out-of-town customers and prospects who might happen in. As a matter of fact, it seemed as if fate arranged matters so that prospects and customers alike seemed to run in bunches of two or three, with the result that both cars were either in or out—and just at the moment when both cars were out someone usually dropped in to see the latest model.

Sales Which Wrong Management Lost.

The trade was mostly farmers—and when they came several miles to see a car they wanted to see it. Alas! they were often disappointed. In many cases farmers have been known to hang around for three hours waiting for a demonstrator to come back—and there was no car of the up-to-date model in the showroom to keep them busy with till the demonstrator got back. "In many cases we could have made the sale and had the car delivered before the demonstrator got back if we had only carried a stock and had a new car on the sales floor," remarked a salesman. "This living from hand to mouth—selling from sample and catalog stuff is not real business; we could double our sales, I am sure, if we only had the cars instead of having to wait a week or ten days for factory shipments. It is not the same as if there were eight or ten models; there's only two, touring car and roadster, and we know that 90 per cent. of our sales will be roadsters. As it is, we frequently lose sales that might just as well be ours."

PLANNING BUSINESS; ITS MEANING AND ITS EFFECT

Plan your business. The old saying, "Foresight is better than hindsight," is another way of saying that it pays to plan your business and run it instead of letting it run you. Planning means being prepared. It means being ahead of time—not behind time. It means a full day's work—and all of it the sort that counts.

Work Done Not Dependent on Time Spent.

There are men who work for 10 hours steadily, but who accomplish little compared to others who work only six or eight hours, but who plan their work carefully. Any salesman who has been on the road knows what a tremendous advantage it is to have all his work laid out so that he knows just where he is going to call that day and how much time he can spend at each place. He must lay out his work weeks in advance, so that within certain time limits he will have covered his territory adequately. He sits down with timetable and route book and gets the whole affair settled in his mind within a few hours' time. He maps out a route—he plans his work and he sticks to his plan.

To plan work inside is not a bit harder. It simply means sitting down with pencil and paper and giving definite thought to what you want to accomplish. Try it. The most successful dealers are the dealers who go at nothing haphazard, who plan every step. And it will always be so. Are you one of the number?

MAKING SALESROOM FARMERS' HEADQUARTERS IN THE CITY

The ever growing sale of automobiles in agricultural districts suggests many ways by which the live and progressive dealer may draw farm trade to his place of business without any extraordinary expense.

One of the ideas advanced and practised by a Western dealer is to make his place of business a veritable headquarters for farmers. He has a ladies' waiting room where a woman can come in and wait for her husband without feeling that she is in the way. He invites farmers to make free use of his place by leaving packages there; and they use his telephone and blow up their tires and fill their radiators at his place and, incidentally, buy their gasolene and oil and accessories there.

Every day some one drops in and he learns of prospects and gets the gossip of the different districts—all of which he cashes in at a profit.

Where 60 per cent. of your prospects are farmers, it certainly pays to cultivate this trade—and he does it.

No-Sale-No-Commission Sub-Dealer Plan.

One Indiana dealer who has been quite successful in lining up sub-dealers who work and make sales attributes his success to his frank, straightforward policy of "no sale no commission." In other words, his sub-dealers thoroughly understand that when they call on him to make the sale they do not get the commission.

"I tell them that when I furnish the prospect—and when I don't—that I expect them to make the sale if they want the profit. It is cheating to force me to make the sale and then try to grab the profit. If a man is square he must agree with me."

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AWAKE-NDISING WORLD

CREATING "BAD TIMES" SALES

Results Which Systematic Work May Accomplish When Others Say "How Quiet!"—Salesman Whose Many Qualities Put Him at Top of List.

Business is largely what you make it.

While one salesman is complaining about the poor times and the astonishing quietness everywhere, another is winning the house record for the best accessory sales ever known.

Why is it?

It is not a matter of territory. Other territories are just as good. Some have more car users in them. That means they are larger. And yet one man outsells 40 others two to one. It is not "conditions." They are the same everywhere. It was application to business. It was the salesman's habit of calling on his trade every day with a cheery, optimistic way of looking at things. His customers were glad to see him. It was his way of going to them with practical suggestions as to how they might increase their business. It was showing them better business methods, where needed, without in any way offending the man by his tactfully put suggestions. It was friendliness. Yes, people do like to do business with someone they consider friendly.

Enthusiastic Belief in His Goods.

It was all these—plus a great many other things—but the greatest things were his enthusiastic belief in his goods and his regular, systematic visits to the trade, rain or shine.

Systematic work tells. The salesman referred to did not know he was beating everybody else. All he knew was that he was doing his very best. When he found he stood first he was delighted, but astonished. He had made business by going after it systematically—by looking for it in the side streets, by seeing opportunities in small stores that competing salesmen neglected. And here he topped a list of 40 when others were saying "How quiet!"

You can do it, too. Try his method. It works in selling automobiles.

BUYERS INTERESTED IN SHOW OF MECHANICAL PARTS OF CAR

There is something wonderfully fascinating about a display of automobile parts. People "like to see the wheels go around" just as much as ever. When you take them over to a table and lift up a highly polished piston and show them how many rings it carries; and how light, yet how strong, is the connecting rod; how simple and efficient the system of lubrication; how smooth and close-grained the material from which it is made they feel that they have really gotten into the vitals of the proposition. Three-bearing crankshafts and all the rest of it are just as seductive as in the earlier days. No matter how much or how little a buyer knows he finds it interesting. It is not only interesting but convincing. But—and here is where many exhibits are lacking—keep the metal parts smooth and polished as they were when they came from the factory. Do not let them become rusty and ancient looking—as they must by constant handling and exposure to the air, unless frequently oiled and carefully looked after.

SALE OF ACCESSORIES MINE OF PROFITS FOR GARAGEMAN

"The garageman who closes his eyes to the profit-possibilities of selling standard accessories of all kinds is deliberately throwing away money and opportunity at the same time." So said an Indiana dealer who sells accessories and makes money on them, too. "The trouble with the average dealer is that he pays no serious attention to the trade-developing side of the accessory and supply business. He simply treats it as a small business not worth looking after. Goods are kept on shelves in dark rooms out of the way. It is hard to find what is wanted. No one knows what is in stock. Things are allowed to get dusty and dirty. Naturally they depreciate in value. They cannot be sold in competition with the bright, clean goods of the merchant who gives the matter whole-hearted attention. In many cases even the dealer himself does not remember what he ordered or received. How can any department of a business make a satisfactory showing under such conditions?

Quantity Buying Gets Right Prices.

"On the other hand, my experience in selling supplies has been exceedingly satisfactory. I stock only standard stuff that I know will sell. I buy in quantities that get me right prices. Careful records are kept of the department. Names of purchasers are secured when possible. We not only make money but our accessory business has been directly responsible for first contact with people who later purchased cars from us. We believe in the accessory and supply end of the business, and it is not guesswork but careful analysis of two years' experience that makes us very sure it pays."

SALESROOM ORNAMENTATION FAST GOING OUT OF STYLE

The use of banners and pictures to decorate salesroom walls is fast going out of style. Dealers are beginning to realize that any object which detracts from the car or attracts attention away from it, is not really intended for the salesroom. An era of neat, plainly decorated salesrooms is in vogue. The salesroom should be merely a setting for the car—planned to focus attention on the car.

Fairs offer unusual opportunities to get in touch with genuine nineteen-fourteen prospects. In some places it is the big chance for the dealer.

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"My Best Sale and Why I Regard It as My Best"

Attention to a Prospect Who Was Regarded as "No Good" Which Netted a Sale After Supposedly Better Men Has Passed It Up—Fifteen-Year-Old Boy and Sale He Made Unaided When Prospect Seemed Losing Interest.

By FRANK RALEDNIS, Omaha, Neb.

PERSISTENT AND CAREFUL SALES WORK THAT INDUCED CUSTOMER TO PAY HIGHER PRICE

My definition of Salesmanship is that it is "a science or art of managing any commodity or self, equal in value, excellence or weight, at a fair margin of profit, by a bold, honorable, enterprising, energetic human being," and in relating the following, I want to assure you it is frank and honest.

"Come back after supper, John," called a young man as the dealer and his customer were leaving. "I'll be here, and I want to talk to you."

"All right, we will be back," was the reply.

This dealer and customer had come in from a distance to buy a machine. The sales manager took charge of them upon their arrival, sized them up as "nothing doing" and turned them over to a travelling salesman who had come in from the territory. This salesman likewise gave up the work, and as the 5:30 whistles blew he was endeavoring to get rid of his parties.

It was I who asked the dealer to come back after supper. I knew he could not get a train for his home until 9 o'clock, and I surmised the customer was going to buy and wanted a machine, because my Rule No. 6 said so; Rule No. 6 is "When a dealer brings customers from a distance to your showroom they are 95 per cent. sold. Exert 5 per cent. tactics and you have the order."

I had a faint knowledge of the machine —I knew it was all right—my enthusiasm was great and I had sufficient grit to talk.

Promptly at 7 o'clock appeared the customers and I immediately brought out the subject. They outlined what they wanted and what they were willing to pay. Of course, it was entirely different from our established selling policy. I set about to change their minds. I became personally interested in their affair and considered myself as one of them—we figured together and asked questions.

I took pains to figure according to their ideas, at the same time bringing in point after point in favor of the particular machine at a higher price than what they wanted to pay and the one the sales manager and salesman were selling. We worked conscientiously for an hour and I was beginning to lose ground—they had made a mistake in figuring and, of course, odds were against me. I had made up my mind to cut the price, but just then a switch engine with a heavy load was passing our office and it seemed to say, "It's got to come —it's got to come—it's got to come."

This increased my vigor, my eye caught the error. I reached for the paper on which they had been figuring and rectified the error. It was done. The order was safely tucked away, duly signed and a cash deposit of $100 was joyously conveyed into the vault, ready for the morning's deposit.

From the above experience I laid down my Rule No. 11.

Rule No. 11: "Persistency plus carefulness helps produce orders."

By PHILLIPS, JR., Orlando, Fla.

JUVENILE SALESMAN DEMONSTRATES HIS ABILITY BY RETRIEVING A SALE THAT WAS WANING

I am a boy 15 years of age, and have figured in several sales of our cars. My father was manager of the leading garage here for two years, but they had two salesmen who took care of their sales, so I did not get a chance to sell a single car while there.

My best sale was one of a S—— "35" touring car which we had used about a month before the garage was sold. At that time we decided to sell our car, as we did not like to run a S—— car when we were handling another line.

Father and I went over in an adjoining county and ran across a prospect, who was to let us know the next afternoon if he decided to take it. He agreed to come over on the railroad and drive the car back if he decided to buy it, but he did not show up, so we 'phoned him.

He said that he had decided not to take it. I got the car cleaned up nicely and drove it over to see another prospect close by, but he did not offer me as good a trade as the first party, so I told him that I would let him know later what I would do, and I drove over to see the first party and sold it to him. If I had not shown it the second time, it is perfectly certain that I would not have sold it. Showing the machine was what sold it.

American Car Wins Australian Climb.

It is not often that the driver of any car has the distinction of beating in open competition the drivers of 76 other cars of 64 different makes and representing practically every nation on the globe. And yet that is exactly what an Australian driver of an American National car did in a hill climb that was held near Melbourne, September 13th, and which marked the opening of the Australian season. The driver is Allan Doone and the car is a stock 40-horsepower roadster. The contest is an annual one that is promoted by the Automobile Club of Victoria and the hill measures seven-eighths of a mile in length and has a grade of approximately one in eight. Not only did Doone beat all of the other drivers in the competition, topping the hill in 1:05⅕, and thereby averaging better than 50 miles, but in a later flight he made the ascent in 1:04⅗. His nearest competitor, who drove a 100-horsepower German Opel, required 1:08 for the ascent. Doone's first flight, incidentally, was made to the accompaniment of rain and lightning.

Query. How Fast Can He Travel?

What may be expected from automobiles in the way of speed in the near future is indicated by the fact that the driver of a 300-horsepower Fiat, after making a careful inspection of the Brooklands track, gravely announced that he would not risk his car on that speedway as he did not consider it safe for speeds of more than 125 miles an hour. When last heard from the man of speed was searching for a long, straight road where he could turn his huge machine loose and find out its capacity.

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ELECTRICAL SHOW UNCOVERS NEW VEHICLES

Chief Element of Newness Furnished by G.V. and Champion Trucks and Bailey Four-Passenger Touring Model—Battery Makers Well Represented by Standard Wares—Model Garage Attracts Few Spectators.

The Electrical Exposition and Motor Show which was opened in Grand Central Palace on Wednesday, 15th inst., and which will be formally brought to a close on Saturday night, 25th inst., is considerably more of an electrical exposition than it is a motor show. Its seven automobile exhibits scarcely entitle the show to the designation "greatest ever" as a vehicle show—last year



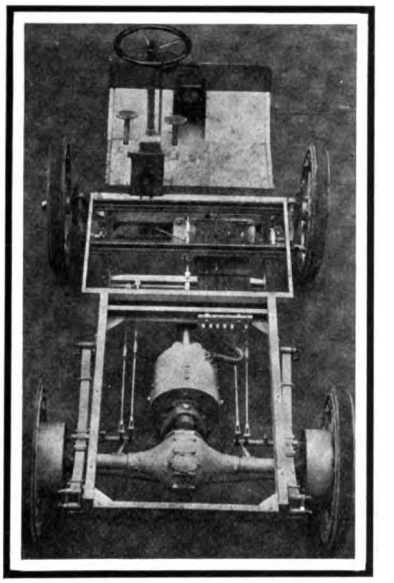
CORNER OF SHOW WITH NEW BAILEY TOURING MODEL IN FOREGROUND

11 vehicle makers displayed their wares—but the seven nevertheless are representative of a good deal that really is new. There is a brand new light General Vehicle delivery wagon; the Bailey company has permitted the show lights to shine on its new four-passenger touring car; and the Henry Tobin company has uncovered a light delivery wagon incorporating a new method of transmitting the power from the electric motor to the road wheels.

But whatever the show lacks in vehicle exhibits it assuredly makes up for in other eye-filling spectables, what with electric toasters and percolators and irons and chicken hatchers, to say nothing at all of a small section of cow stable, a part of the United States Mint and other Government exhibits.

From the tiny and white and antiseptically clean and sweet-smelling section of cow stable it is but a step to a model dairy where milk is turned (literally, with the aid of a centrifugal separator) into cream, and a hop, step and a jump further there is the entrance to the model electric garage. On three occasions, the main room of the garage, which is but a section of the spacious floor enclosed in corrugated sheet iron, contained as many as three vehicles, three charging panels and a profusion of Electrical Exposition and Motor Show posters. Add to the main room a much smaller one labeled washing room and containing nothing more than an overhead washing device, a slightly larger adjoining room containing enough storage batteries for half a dozen vehicles and a third room containing several pieces of garage machinery, not in operation, and several types of Shaler electric tire vulcanizers, in operation, and the model garage is complete. Its most striking feature is its broad expanse of floor space and, though there is always some one in one of the four rooms to explain the mysteries of the charging apparatus and other apparatus, there never is any jostling of crowds between the galvanized walls. One attendant is sufficient to answer the questions of those who hanker after further information than that disclosed by a view through the open doors.

On the main floor, where all the electric vehicles are disposed, the space occupied by the General Vehicle Co. is directly at the head of the marble stairs leading to the exposition floor, though even if it were in a less conspicuous location it is doubtful if it would fail to attract attention, for it holds one of the really new things of the show. The new vehicle is one of a type



CHAMPION CHASSIS SHOWING DRIVE

that marks a radical departure from previous General Vehicle practice for the simple reason that it incorporates shaft drive to the rear axle through the intermediary of worm gearing; the worm is mounted above the ring gear. The capacity of the new vehicle is 1,000 pounds, and its most conspicuous difference from its predecessors is that it carries its battery in front of the driver under a sharply slanting hood which suggests not a little gasolene vehicle construction.

The setting of the vehicle itself is a clever one and the object of the "stage manager" to show the successive stages of evolution through which the General electrics have passed since the year 1901 has been very ably accomplished. Flanking the new vehicle, there is one of the original G. V. types which has the double motor pinion drive and at the other side there is another vehicle of the same general type except that

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it is six years younger and instead of the double motor pinion drive has a single motor chain drive.

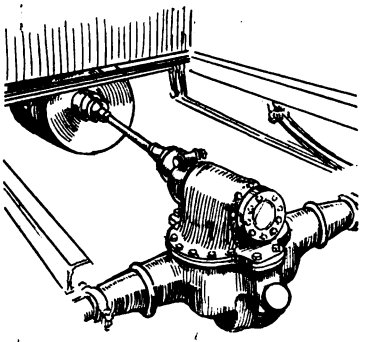
In the larger G. V. trucks a number of improvements have been made, not the least important of which is the adoption of a new type of controller box which is formed of sheet steel and therefore is completely fireproof; incidentally, it carries a new three-way running switch of the drum type which permits the operator to "kill" the truck while it is unattended. Another safety device that has been added is a cut-off switch which makes it impossible for the truck to be started while it is being charged, and also permits workmen to adjust the controller while the charging operation is in progress. The other more important alterations embrace the adoption of rigid conduit containers for all the wiring; the location of a plug receptacle for a portable lamp on the driver's heelboard; the adoption of grease cups for the spring shackle bolts; the addition of a sheet steel tool box under the rear of the vehicle; and the provision of emergency brakes on the vehicles of from two to five tons capacity.

At the space where G. M. C. trucks hold forth there is what appears at first glance to be a complete three-ton vehicle loaded to the "gunwales" with potted plants. Closer inspection, however, reveals that as far as the body is concerned at least, it is but half a truck. The chassis is complete, and and searchers for construction that is new might as well pass it by, for it is the same truck that basked under the light of the incandescents at the last electrical show. But the body construction is novel; from one side it is a complete body; from the other it is half a body with all the intricacies of construction laid bare.

Hard by, a massive Couple-Gear converted horse-drawn truck rears its elevated hood, under which a placard conveys the information that "We use drivers, not chauffeurs," the intimation, clearly borne out by the vehicle, being that the operation of the truck is simple enough for even the thickest skulled truck driver to grasp easily. The construction is not new, of course, though it is none the less suggestive of the economy of converting horse-drawn trucks into power drawn ones with the aid of a pair of Couple-Gear wheels and a battery.

Scarcely more complicated, despite the fact that it is a complete electric delivery wagon from stem to stern, the Champion, which is displayed by the Henry Tobin Co., of New York City, reveals drive construction that is new, not only to itself but new in its field as well. The vehicle itself is of 1,000 pounds capacity—it is made to carry 750 pounds, too—and is equipped with a single motor rigidly bolted to the rear axle construction and so pivoted at the forward end that the maximum of flexibility is obtained. The drive is direct through a double herringbone gear, the smaller pinion being mounted on the armature shaft. The larger pinion is direct connected to the driving gear at the differential mechanism, making plain the simplicity of the construction. In the larger-sized vehicle the battery equipment consists of 42 cells of 11-plate Hycap or 60 cells of Edison A-4; in the smaller one the battery consists of 24 cells of 15-plate lead or 48 cells of Edison A-4. The wheelbase in both models is 84 inches, the larger model having 32 x 3 tires and the smaller one 32 x 2½ tires.

In the single 2½-ton stripped chassis that serves as a demonstrating model for the salesmen of the Ward Motor Vehicle Co., there is nothing that is radical in construction, considering previous Ward trucks, and little that is really new, the designers evidently being satisfied to let well enough alone. One new feature that is calculated to put an end to no end of annoyance is the enclosure of all wiring in solid metal conduits.



G. V. WORM DRIVE MOUNTING

In pleasure cars, the four-passenger touring car that has been brought out by the S. R. Bailey Co. and that is exhibited side by side with the older and better known Bailey runabouts, is the newest thing on wheels, and except for the fact that it is slightly smaller and slightly lower than a gasolene car, might easily be mistaken for one. As far as the transmission elements of the car are concerned, they are no different from those in the roadster and these in turn scarcely have been changed at all since last they were displayed to the gaze of the curious. The new car has a roomy body in which four big passengers would not feel cramped. The battery, of course, is larger than that supplied with the roadster models and consists of 60 cells of Edison A-6, which, it is calculated, is plenty to propel the car from 90 to 100 miles on a single charge. The car sells for $3,300.

The only other exponent of the electric pleasure car is the Standard, which is exhibited by the Elizabeth Automobile Co. of the New Jersey town for which it is named. The car that represents the Standard line is a coupe model with accommodations for four passengers, the driver's seat being at the rear, though its position is no hindrance to unobstructed view of the road both before and behind.

As far as the accessory exhibitors are concerned—if those who display wares other than vehicles may be so styled—the battery makers are very much in evidence, though none of them have anything that is really new. At the Edison display, there are Edison batteries, of course, and the new vibrating rectifier that last year made its initial appearance. The Electric Storage Battery Co. has an extensive exhibit of its Exide batteries set off by illuminated transparencies showing the wide applicability of the battery in various businesses; the piece de resistance of the Philadelphia Storage Battery Co.'s exhibit are the thin plate cells for which the name Philadelphia is well known; Gould batteries are shown in all their various types and in a new type which has been developed especially for central station work and therefore is of more interest to power engineers than to dealers.

In other fields, the H. W. Johns-Manville Co. has an extensive and comprehensive exhibit in which automobile accessories have an important place, and the same may be said for the Westinghouse and General Electric companies. The Manhattan Electrical Supply Co., whose Mesco products are well enough known to need no introduction, has an illuminated dry cell exhibit and a single exhibit of ball bearings, made by the Rhineland Machine Works, serves to make plain that while the automobile industry is one of the largest users of such anti-friction devices, other industries as well use great quantities of them.

The complete list of exhibitors who display wares intimately or remotely connected with the automobile industry is as follows: Albert and J. M. Anderson Mfg. Co., Boston, Mass.; S. R. Bailey & Co., Boston, Mass.; Edison Storage Battery Co., Orange, N. J.; Electric Storage Battery Co., Philadelphia, Pa.; Elizabeth Automobile Co., Elizabeth, N. J.; General Electric Co., Schenectady, N. Y.; General Motors Truck Co., Detroit, Mich.; General Vehicle Co., Long Island City, N. Y.; Gould Storage Battery Co, New York City; H. W. Johns-Manville Co., New York City; Manhattan Electrical Supply Co., New York City; Philadelphia Storage Battery Co., Philadelphia, Pa.; Rhineland Machine Works, New Britain, Conn.; Clarence L. Smith Co., New York City; Wagner Electric Mfg. Co., St. Louis, Mo.; Henry Tobin Co., New York City; Ward Motor Vehicle Co., New York City; Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

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THE DIFFERENCE BETWEEN SYSTEM AND RED TAPE

Reilly Explains How a System Which Handicaps a Business Is Not Efficiency—He and the Sales Manager Untangle the Tape That Tied Up a Nearly Finished Car—Instances of Inefficiency.

"That's all right, Jim, but, goldarn it!" and Reilly thumped the Sales Manager's desk with his fist, "that man wants to start on a tour tomorrow and he wants that car——"



"HE MONKEYED AROUND MAKING THE SALE OF THAT BOLT FIT HIS SYSTEM"

"Won't he wait a day or two?"

"It isn't that," asserted Reilly, hitching further forward in his chair and giving his hat a push further back on his head, "I told him he could have it today and——"

"Well," interrupted the Sales Manager, "if he's got to have it——. I didn't know it was such a rush job——"

"What's the matter with it? Why isn't it ready?" demanded Reilly.

Ascertaining Why the Car Was Delayed.

"I don't know; let's go out and see; it was coming through on schedule; something must have happened to it," and suiting the word the Sales Manager reached for his hat and, with Reilly, started for the Final Assembly floor to see why a car with special upholstery was not ready for the owner who wished to start an autumnal vacation tour on the morrow.

Down the long line of cars they went, each one moving slowly, step by step, toward the other end of the floor; when a car reached the door it was supposed to be ready to go out. Both men watched the line, but there was nothing which looked like special upholstery.

"Must have gone out," remarked Reilly. "No—isn't that it?" He pointed to a car which had been rolled over out of the line.

"As sure as tire trouble!" exclaimed the Sales Manager, inspecting the tag which hung on the windshield.

"What's the matter with this car?" both asked in unison as the assembly foreman approached.



"IF HE HAD STUCK TO SYSTEM THAT CAR WOULD HAVE BEEN TIED UP TWO DAYS"

"Somebody kicked all the paint off that hind wheel on the other side," he explained, leading them around the car where they could see that one wheel was missing.

"Where's the wheel?" asked Reilly.

"Up in the Paint Shop."

"When'll it be done?"

"Couple of days more."

The foreman looked at the Sales Manager, the Sales Manager looked at Reilly, Reilly looked at the empty axle and no one said anything. Finally Reilly uttered a subdued "Hell!" Then his face brightened.

"I've got it! The color's standard; why not take a wheel off of one of those cars that won't be this far down the line for a couple of days?"

The foreman shrugged his shoulders.

"Yes! Why not?" agreed the Sales Manager.

Getting an Inside Glimpse of System.

"Can't be done," answered the foreman.

"Can't! I could do it myself!" exclaimed Reilly.

"Anybody could do it, so far as the mere doing is concerned," said the foreman, "but it's contrary to the system."

"What's the system?" This from the Sales Manager.

"It's like this: A car starts in at one end of the Final Assembly line and moves from station to station; when it gets to this end it is supposed to be ready to go out for final inspection and test. When something happens like this the only thing to be done is to push the car to one side and wait for the wheel, for if we take a wheel off some other car it robs this other car of its rights according to the system."

"But if the other car got here before the

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wheel was ready, couldn't you rob another tail-ender in the line and keep the whole line moving in that way?" asked Reilly.

"You could—but not according to the system," replied the foreman.

The three were still gazing in silence and pondering on the problem when the Old Man walked in the door from the factory yard. He stopped at sight of the thoughtful group. "Now what?"

The Old Man Effects a Quick Solution.

The trio told him of the dilemma, and as the situation was made clear the Old Man looked at Reilly with a curious little smile. "Get 'em a wheel, Bill; get 'em a wheel," he said to the foreman, patting the back of that individual's jumper.

When the car was rolled down the gangway fifteen minutes later Reilly and the Sales Manager followed it and watched operations as a yard man filled the "gas" tank and ran the car across the card to the corner where the Final Inspector did his work and could be found when he wasn't taking a little run around the block. At this particular moment he was on "a run around the block."

"Who's the father of that system?" inquired Reilly while the two waited for the Final Inspector's return.

"Search me; I don't know much about it. Some system, though, isn't it?"

"I should say it was, more or less. It's a wonder the Old Man doesn't 'can' it. I don't believe he inaugurated it."

"No, I don't believe he did," replied the Sales Manager. "He's stronger on results than he is on system."

Excess of System Worse Than None.

"System is all right," continued Reilly, "but too much system is a handicap. Take that instance this morning. What a simple little thing it was to get that car off the floor, and yet if the foreman had stuck to the system the car would have been tied up for a couple of days yet. And all the time the owner would have been fretting and fuming—and so would I. That car represents too much money—for the factory, the owner and myself—to be made the victim of such a nonsensical arrangement."

"But you've got to have some system," argued the Sales Manager.

"Certainly you have; I'll admit that," replied Reilly, "but red tape isn't system. A business that is encumbered with an overdose of system needs a good, vigorous man to take a hand and straighten things out. There used to be a supply store down home that died from an overdose of system. You notice I say 'used to be,' for it is a 'used to be.' The man who ran it was a chap named Casson and he needed some sort of system, for he was the darndest scatter-brain that ever happened. He couldn't run a barber-shop and keep his cash straight.

"He opened a supply store and, with the assistance of a few efficient employes, managed to get along fairly well until he got the system bug; the bug bit him hard. He became wildly enthusiastic over systems and grabbed at them all; I was in there one day and he started in explaining his systems, and it made me dizzy. He had more kinds of blanks and double and triple duplicates and indexes and cross-indexes than I ever believed existed, and he had filing cabinets all over the place. I asked him how the business was going. He said, 'Good.' I asked him how the system worked, and he said 'Fine! Great!'



"WHAT YOU ORDERED REQUIRES FORM 23—YOU USED 25"

"If a man wanted to buy a nut or a bolt, that cost maybe three cents, the clerk had to make out a blank to which there were several duplicates attached, and he monkeyed around till hell froze over making the sale of that nut conform to the system.

"A great many good stores have their clerks make out checks for sales and it seems to work all right. I can't exactly explain the difference, but Casson's system was wound around the business like ticker tape in one of these cartoons of a busted stock broker."

"Don't you have any system in your place?"

Example of Governmental Inefficiency.

"To be sure I do!" replied Reilly, uneasily sliding the brake lever back and forth on the ratchet. "But I do considerable business on the side. I don't let the system monopolize my time and energy. Any man has to have some kind of system to keep things straight, but there isn't any necessity for letting it become a bugbear.

"I read something pretty good in some paper the other day. It was about the red tape of our Federal government, which is an excellent example of why system does not connote efficiency. A young doctor was sent to Cuba during the Spanish-American war and he found hospitals with men in bad shape from wounds, typhoid and yellow fever. There was a shortage of quinine and other medicines and there were no dressings, so he hurried a demand to Washington for the necessary supplies. He was a very anxious man while he waited for the return of the ship with the stuff he had ordered. He was much relieved when the vessel arrived, but instead of supplies he got a letter which said, 'What you ordered requires Form 23 and you have written the requisition on Form 25. Please make the order out again on the correct form and send it to us so we can fill the order.'"

"Well?" demanded the Sales Manager. "How would you do it?"

Dealer Applies Point to Own Business.

"I'm not an efficiency expert and don't pretend to be," replied the dealer, "but I'll bet I could figure out some better plan than that; any dealer or manufacturer needs some way of knowing the head and tail of his business, but what I object to is permitting it to degenerate into pure red tape. I could make my salesman write out a long report on what happened every time he saw a prospect, submit the report to me, I could make a notation on the prospect filing card, file the report and tangle things up unnecessarily. But when the salesman sees a prospect, all I ask is that he make a brief notation on the filed card."

"Here he comes now," said the Sales Manager as the Final Inspector drove into the yard in the car he was inspecting.

"Can you look this car over now?" asked the Sales Manager.

"This one? Not now," replied the inspector. "I have to take them in order as they come down from the Final Assembly."

"But you can look it over and Reilly'll do the rest, can't you?"

Reilly Takes System Bull by Horns.

"No, honest I can't. I'd like to, but I have to go by the system and make out blanks, and so forth; it's quite a job."

"But I'll do the little road test; all you need to do is give it a once over on the outside," volunteered Reilly. "This car is promised today and I want to take it back."

"I'm sorry; but according to the system——"

"Oh, you and your system go to h——!" exclaimed Reilly, as he climbed into the car and threw on the starter.

The Sales Manager was still smiling and the Final Inspector was still agape as the dealer, in passing out through the gate, stepped on the cut-out as an expression of his opinion.

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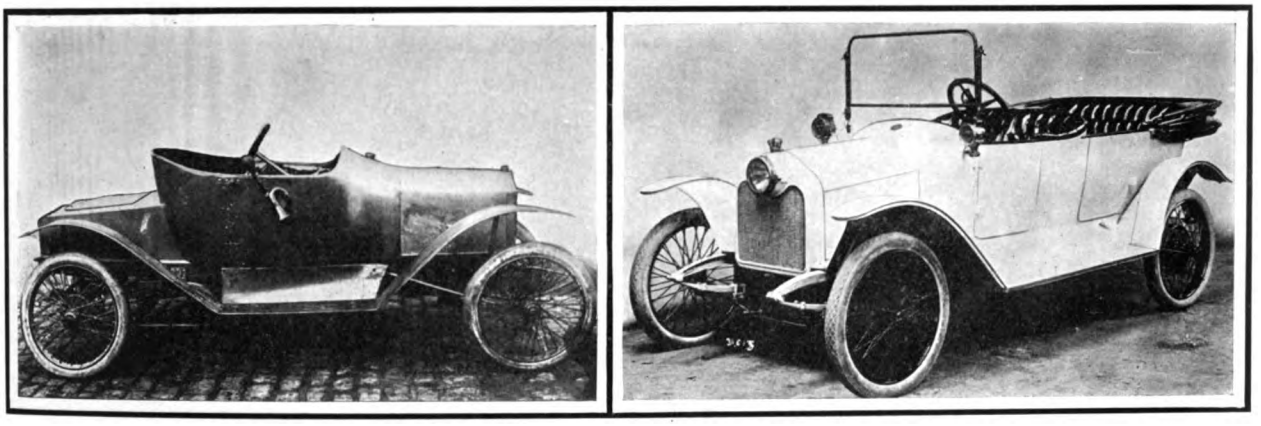
BRISCOE'S FIRST PRODUCTS REVEAL NOTHING RADICAL

Touring Model and Cyclecar Are Both Well Standardized Fours—Will Appear Simultaneously Here and in France.

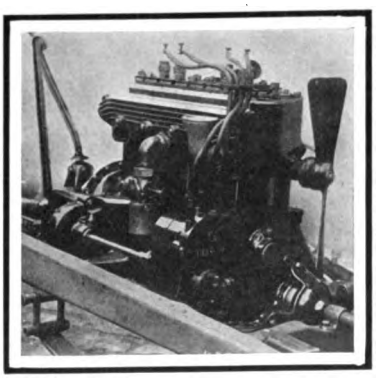
Their plans and their production having progressed to the point where at least two cars have materialized from the ideas carried to France more than a year ago by the Briscoe brothers, Benjamin and Frank, details of the two cars that will monopolize the activities of Briscoe Freres, of 30 Rue du Point du Jour, Billancourt, Seine, France, at length are available and they reveal little or nothing that is radical in construction and a modicum of American standardization.

As yet, the two cars, one of which is a five-passenger touring car carrying a 16-horsepower motor and the other is a cyclecar pure and simple, have not formally made their appearance on the market, and not until after a sizable factory, which already is being equipped, has been completed, will they do so. It is expected that the factory will be ready for operation about the first of the new year, when production of an initial batch of 6,000 cars will be commenced. At the same time, production of the cars in an American factory also will be commenced, though just where the factory will be located has not been disclosed. It is certain, at any rate, that it will be a Briscoe Freres factory, and that the American production of Briscoe cars will not be turned over to some other American company already formed or to be formed. The Billancourt factory and the one to be operated somewhere in the United States will be under the same management. In the meantime, Briscoe Freres's American affairs are being directed from a temporary office located at 7 East 42d street in New York City. This will be closed when the American factory becomes a fact.

Following the expressed intentions of the Briscoe brothers to produce cars incorporating what to Briscoe eyes is considered to be the best of foreign practice together with the best of American practice, the two cars that will go to make up the line are decidedly Frenchy in appearance, though in construction they exemplify the simplicity that always is such a prominent distinguishing mark between the majority of foreign cars and American cars. The larger of the two cars, as already has been made plain, is a five-passenger vehicle with a roomy body carried on semi-elliptic springs both front and rear. Throughout the construction great attention has been paid the necessity for lightness, and to this end chrome vanadium and other alloy steels have been used very considerably.



BRISCOE CYCLECAR WHICH WILL SELL FOR $390, AND THE TOURING MODEL LISTING AT $900



MAGNETO SIDE BRISCOE MOTOR

The motor is a block casting with all of its movable parts enclosed after the latest American practice. The bore and stroke measure 80 x 130 mm, which approximates to 3 5/16 x 5¼ inches, making plain that the designers have taken a leaf of the foreign book of rules which at present palpably favors the small bore high speed motor. Though the nominal rating of the engine is only about 17 horsepower, it is claimed to actually deliver as much as 32 horsepower on the brake at 1,800 revolutions a minute. Valves are all located on the one side and are operated by adjustable tappets with fiber heads to reduce noise.

The cylinder block and crankcase casting is a single piece with the base of the crank member, which serves only as the oil reservoir, formed of a steel stamping held in place by a series of bolts. The crankshaft, which measures 1⅞ inches in diameter, is carried in two long, plain bearings. Cooling is by thermo-siphonic action, assisted by a large radiator and a two-bladed fan of the aeroplane type driven from the crankshaft by a flat belt. Ignition is effected by a high-tension Briscoe magneto mounted at the left side, as shown by the accompanying picture. Lubrication is carried on by pump circulation and, by way of increasing simplicity, external piping has been reduced to a minimum.

The engine is mounted on three suspension points, two arms virtually encircling the flywheel being at the rear and attaching directly to an unusually compact three-speed selectively operated gearset. Control levers are placed centrally and the steering wheel may be at either the right or the left side. Final drive is by means of a long propeller shaft, contained within a torque tube, to a bevel gear rear axle of the full-floating type. For the present, the selective type of sliding gears will be used for the transmission of power, though it is planned eventually in the larger car to use a new type of hydraulic change speed mechanism which will eliminate all gears and greatly simplify control.

The wheelbase of the car is 105 inches and it is carried on wire wheels shod with 30 x 3½-inch tires both front and rear. The car is to sell for about $900 with complete equipment, including electric lights fed from a storage battery, top, windshield,

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tires and speedometer. The weight of the car complete is to be 980 pounds.

The cyclecar, which will be marketed under the name Ajax, is materially different from the larger car in that it has all the attributes of the little vehicles in its class, including friction transmission of power and single chain drive. The body, as may be seen by the accompanying illustration, which shows one of the first experimental cars turned out, seats only two passengers and allows plenty of room for "luggage" at the rear.

The motor is an unusually compact four-cylinder machine with detachable cylinder heads, and, needless to add, its four cylinders are cast in a block. The bore and the stroke are 57 and 96 mm, respectively, or approximately 2¼ x 3¾ inches, and the construction follows closely the construction of the larger motor. Cooling is by the thermo-siphon system of water circulation and ignition by a Briscoe high-tension magneto. As with the larger motor, the intake piping is incorporated with the exhaust, so as to provide warm gas to the cylinders; lubrication is carried on by a pump.

For the transmission of power the usual friction disks and single chain to the solid rear axle are used, the differential mechanism being eliminated as unnecessary. The rear suspension of the car is an interesting type of cantilever, the short front arm of which is carried downwards and holds the radius rod. The front of the chassis is supported on full elliptic springs of the usual type. Detachable wire wheels fitted with 650 x 65 mm. tires are part of the standard equipment, which will be listed with the car at the price of $390.

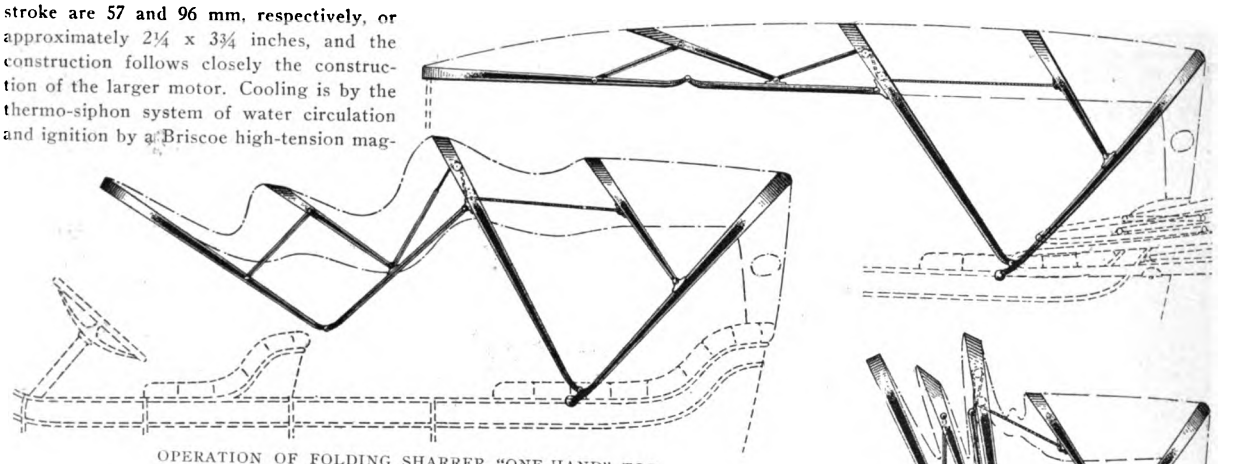
First California Tire Shipped Eastward.

Marking an epoch in the tire industry, the Savage Tire Co., of San Diego, Cal., has shipped a carload of its tires to the Colorado Savage Tire Co., of Denver, which has been organized in that city by Chauncey W. Hauser and Lawrence Sullenberger. The order is the product of the factory in San Diego and is the first eastward shipment ever made of tires manufactured on the Pacific Coast.

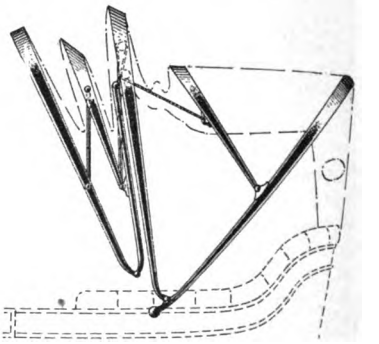
ONLY ONE HAND REQUIRED TO MANAGE SHARRER'S TOP

Flexible Cable Support that Prevents Sagging and Adds Strength—Forward Section Supported Without Side Frames.

An automobile top is a covering for protection against the elements—a covering that can be pushed back out of the way when not needed. But a top is something else, too. It is a paint-scratching, finger-pinching, temper-taxing, time-taking device, or it is—well, it is more or less lacking in those most undesirable qualities, according to the way it is designed and constructed. According to the people who make it, the Sharrer top, which is but just making its appearance on the market, is totally lacking in all qualities it should not have, and possesses just the good points that a top needs. And the accompanying illustrations show that there is more in the opinion expressed by the Sharrer Patent Top Co., Inc., of 245 West 55th street, New York, than can be accounted for by mere pride of possession.



OPERATION OF FOLDING SHARRER "ONE-HAND" TOP



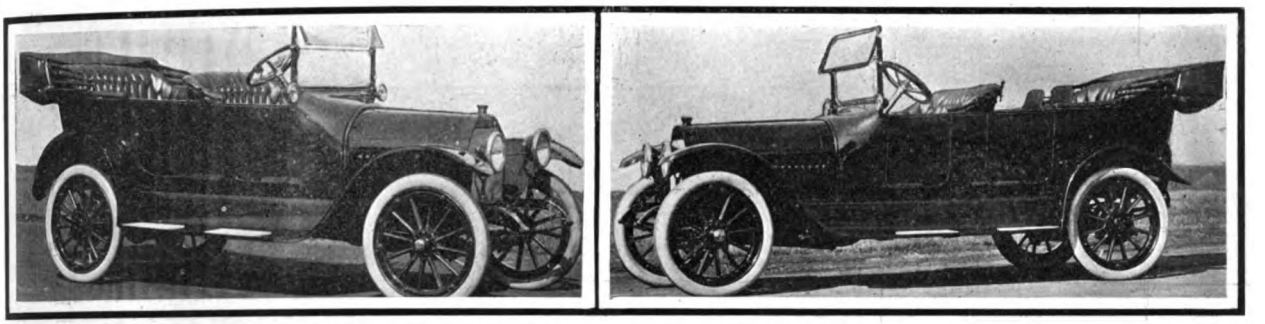
FINAL FOLDING STAGE

The top is attached to the car at one point only—that is, one point on each side of the car—and that is at the rear seat. When the top is extended the rear half is carried by the two main bows, which are supported by steel tubing frames extending forward and backward at an angle from the point of attachment to the car, and by an intermediate bow attached to the rear main frame. The forward extension has a frame around its edge with a hinge about the middle of its length. A bow hinged to the forward frame-work gives support to the forward fabric and it is braced, as shown, by short rods. The feature that makes this form of construction possible, however, is a flexible cable attached to the intermediate bow of the rear half of the top, running over two pullies on the forward main bow and thence to the bow of the forward extension. The cable, which is invisible, gives the top the support it needs when extended, taking the extra strain off the fabric, and also prevents the frame from falling and scratching paint and bothering occupants of the car when being folded or opened.

When the forward straps or other means of attachment to the top of the windshield or the front end of the car, as the case may be, are loosened, the top can be pushed back with one hand, supporting its own weight all the way back and finally folding compactly and with the fabric neatly disposed between the frames so that the boot or dust-cover is easily slipped on. The opening process is equally simple, and for this reason the makers state that the top not only can be opened or closed with one hand by a man, but by a child, for that matter.

The framework of the Sharrer top is of steel tubing and straight grained ash, and is finished in any desired way. The fabric is waterproof mohair, cravenette or pantasote and both back and side curtains have celluloid windows. Either Jiffy or Collins curtains can be used. The method of suspending part of the weight on cables results in a light construction, so that the Sharrer top weighs but little, comparatively speaking, though it is extremely rigid and has no side sway. It is made to fit any size or style of body.

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FOUR-CYLINDER STUDEBAKER LISTING AT $1,050, AND THE "SIX" WHICH SELLS FOR $1,575

TWO STUDEBAKER CARS TAKE PLACE OF THREE

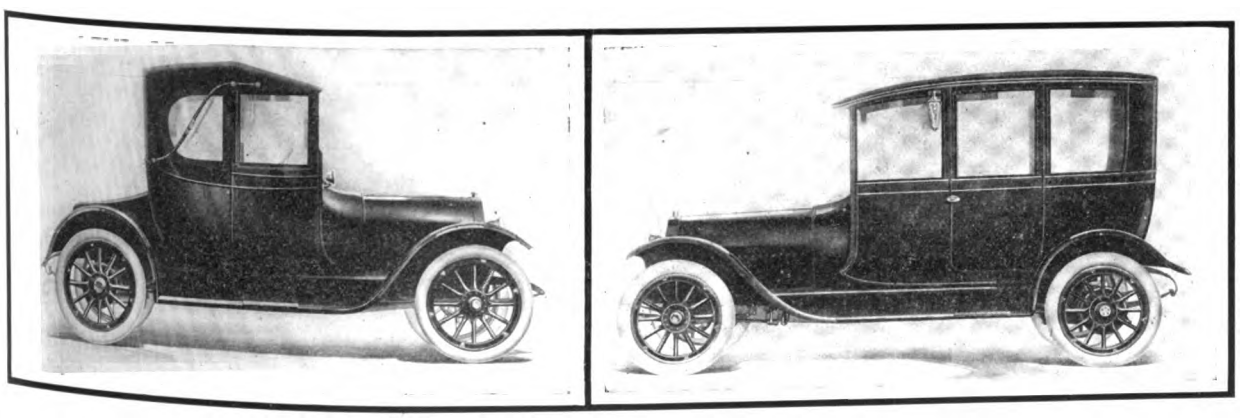
Larger of the Two "Fours" Dropped and Smaller One Practically Rebuilt But Without Radical Change—Electrical Equipment Added—Left Drive For Both Four- and Six-Cylinder Models—Other Refinements.

When, about a year ago—in November last, to be exact—the Studebaker Corporation of Detroit, Mich., very radically reconstructed its line and brought forth two new four-cylinder models and a "six" that since has proven all that its engineers hoped for it, it was not to be expected, in view of the very thorough manner in which the line was revamped, that other material changes would be forthcoming for some little time. And now that the revisions of the newly revised line have been made public, it is revealed that the premise was a perfectly logical one. For though the line has again been very considerably revised and only the memory of the larger of the two four-cylinder models remains as one of the results, the revision does not by any means amount to a reconstruction, as was the case last year, and instead is confined to the adoption of a number of unmistakeable improvements that bring the two remaining cars more than ever up to the last minute in design and construction.

Coincident with the improvements that have been made, most prominent of which to the eye is the shifting of the steering gear to the left side and the control elements to the center, the adoption of slightly tapering engine hoods, and bodies that are streamline in effect as well as in appearance, the prices of the two cars have been increased, though the increase no more than compensates for the equipment that has been added. The "four," for instance, now lists at $1,050 instead of $885, but it is a larger car in nearly every respect and now has a complete electric lighting and engine starting system, which it never had before; the increase in the price of the "six" is a nominal $25—the old price was $1,550—in spite of the fact that it has all the improvements that characterize the "four"; it always had complete electrical equipment, however.

Bodies, hereafter, will be confined to three types, including touring models quite as a matter of course. The Sedan, too, has been retained and the third body is an unusually attractive one which may be on occasion either a conventional roadster or in effect a coupe, completely enclosed but without the disadvantage of the usual coupe body which is apparent in its weight. The new model is styled a Landau-Roadster and its picture, which is reproduced herewith, conveys a better idea of its appearance and construction than could all the words in old Noah Webster's famous volume. The touring models are made in two sizes only, the "four" carrying five passengers and the "six" providing accommodations for seven passengers. The Roadster-Landau on the six-cylinder chassis has plenty of room for three persons, and the same type of body on the "four" chassis is identical except that it is slightly smaller.

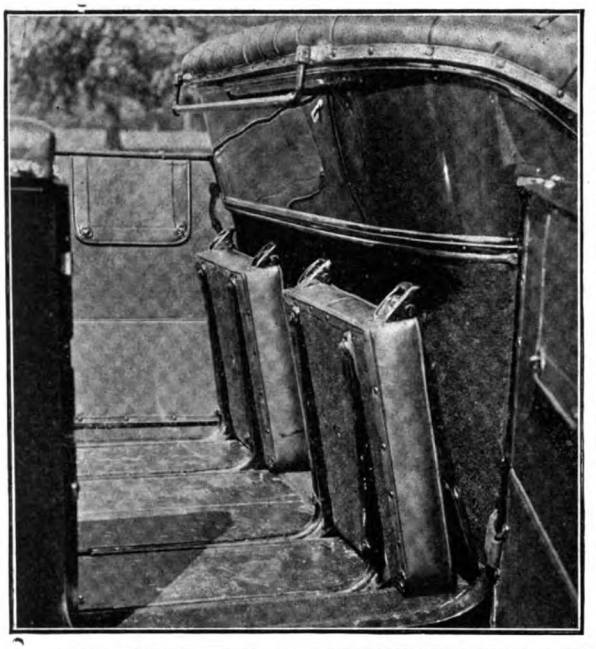
In revising their line, Studebaker engineers very evidently have paid quite as much attention to bodies as they have to the more or less hidden parts of the chassis, and as a result they have all the little

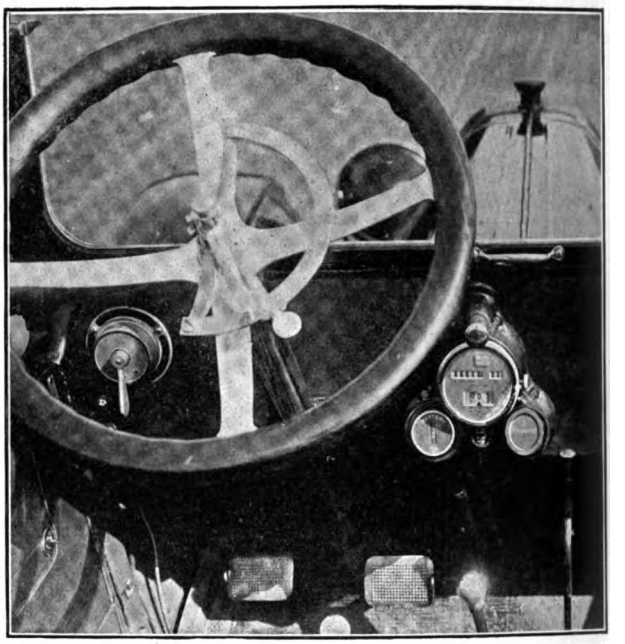


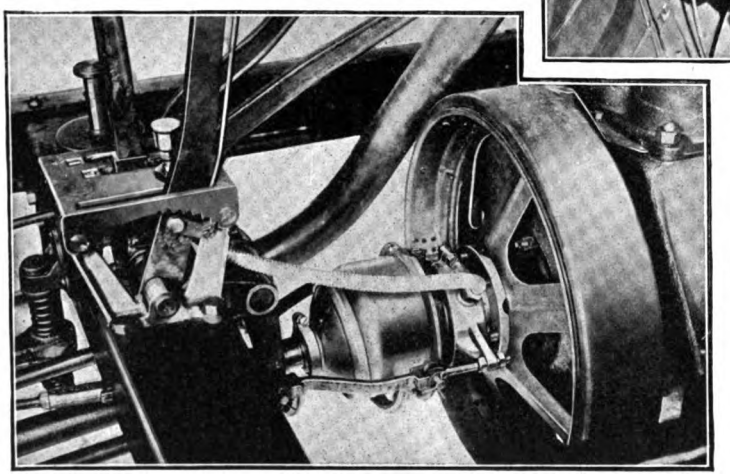
CONVERTIBLE LANDAU-ROADSTER MODEL

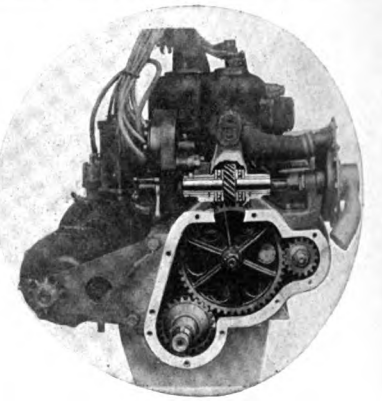
SEDAN "SIX" IN ITS REVISED FORM

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UPPER LEFT—STUDEBAKER FOLDING TONNEAU SEATS. UPPER RIGHT—GROUPING OF DASHBOARD INSTRUMENTS. LOWER LEFT—NEW CLUTCH AND LUBRICATION METHOD. LOWER RIGHT—ENGINE SHOWING STARTER MOUNTING

kinks and wrinkles that mean so much to the dealer as talking points and to the owner as comfort points. In the first place, bodies are roomier than they have been, and in full recognition of one of the principal advantages of left-side control, entrance to the driver's compartment from that side is quite unobstructed, a feature to which clear running boards contribute in no small way; spare tires are carried at the back of the tonneau. Entrance to the tonneau also has been made easier by the adoption of full U-shaped doors, and it goes without saying that upholstery and the shape and position of the seats have received such attention as may have been necessary to render them still more comfortable.

One little feature of tonneau construction which will serve as an apt illustration of the thorough manner in which the comfort of passengers has been examined is revealed in the manner of disposing of the auxiliary seats. When they are not in use, they fold neatly into a recess in the back of the front seat, instead of pivoting against the sides of the tonneau and the knees of those who ride in it. In the driver's compartment control has been facilitated by a clever grouping of the Stewart speedometer, the electric indicator dial and the sight feed of the oiling system. Not only are they thus brought simultaneously in the vision of the driver, but a single, hooded incandescent serves to illuminate all three. This unit, by the way, is mounted in a rather deep cowl which serves to house the gasolene tank after the manner that steadily is growing in popularity. The construction, needless to point out, provides for a short, straight feed to the carburetter by gravity, and at the same time permits the lowering of the front seats without danger of necessitating reduction of fuel capacity to obtain the same result.

Allowing for the necessary difference in wheelbase length and in the size of essential parts in the two chasses, they are practically identical, so that a description of one, therefore, will serve for both. In the matter of spring suspension, however, there is an important difference in construction. Under the rear of the four-cylinder chassis there are full-elliptic springs in which the

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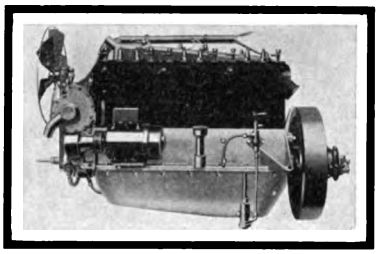
under members are hung beneath the axle, thus providing for a low-hung chassis. In the "six," the rear springs are of the three-quarter elliptic type, as has been the case in the past. The front suspension in both chassis embraces the conventional semi-elliptic members.

To start at the beginning of the chassis and work backward, both motors have their cylinders cast in a rigid block and in both cases the bore and stroke measure 3½ inches and 5 inches, respectively. Except for two or three deviations from past practice, the motors have not been altered and present their original compact appearance with the water pump and the magneto driven from a transverse shaft in front. The first difference concerns the pistons, which now have flat tops instead of the domed tops they had at first. Repeated experiments, it is given out, have demonstrated the superiority of the flat top piston over the other, and as a result Studebaker engineers have not been slow to adopt them. Instead of turning on the cast iron bearing of the piston bosses, wrist pins now turn in bronze bushings, allowing for adjustment and replacement.

The other alteration is a more extensive one and is embraced in a complete revamping of the electric lighting and engine starting system which, instead of being included in a single unit, has been split into two units, which are separately mounted and driven. Under the new plan, the generator is placed on the left side of the motor and is noiselessly driven by a shaft and pinion in mesh with the camshaft gear. The starting motor is at the right side and is connected to the engine through the intermediary of a roller clutch and a chain. A single pinion gear reduction, encased within the unit, together with the chain and sprockets, permits a gear reduction of about 20 to 1. Current for starting and for the lamps is drawn from a six-volt Willard battery that is hung to the chassis frame. The charging operation commences when the car speed reaches 10 miles an hour and is at its maximum when car speed is 20 miles an hour.

Due to the employment of a simple overrunning roller clutch between the electric motor and the engine, there are no gears to shift for starting and, as the electric motor and its connections become stationary immediately the starting current is turned off, the system is practically noiseless. Both the generating and cranking units are made to Studebaker specifications by the Wagner electric company of St. Louis. Adoption of the new starting and lighting system, or, rather, the development of the old one into a new one of greater efficiency, has resulted in a change in ignition methods, too. Instead of a magneto, there is now a simple Remy distributer and coil, current being drawn from the main storage battery. Mixture is supplied by a Studebaker-Schebler carburetter and, as heretofore, the cooling water is circulated through the system by means of a pump.

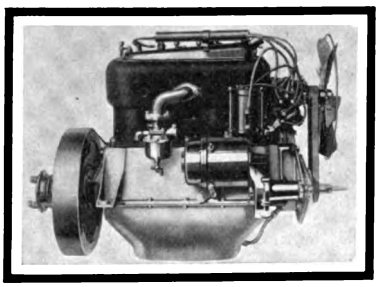
Further along on the chassis, the clutch, which remains of the cone type, shows a number of improvements, and in both models its size has been slightly increased. Instead of bearing simply on a shoulder, it now moves by the engagement of two



EXHAUST SIDE STUDEBAKER "SIX"

grooves and rings, and lubrication is supplied from a grease cup on the H-plate communicating with the bearing by means of a flexible steel tube. Gearsets remain the same and provide three forward speeds and reverse, the unit in each case being rear axle mounted after the usual Studebaker practice.

Another change in the four-cylinder model that is calculated to increase efficiency and to reduce up-keep expense lies in the substitution of a full-floating rear axle for the semi-floating design that has been used in the past; the four-cylinder model and the "six" now are exactly alike,



INTAKE SIDE STUDEBAKER "FOUR"

as far as their axles are concerned, for in the "six" this member always has been full-floating. Brakes, too, have been slightly altered and both sets now are equalized through rods extending through slots in the frame. The wheelbase of the "four" measures 108 inches and of the "six" 121 inches, the former dimension representing an increase of six inches. Wheel dimensions in the "six" remain unchanged, all four wheels being shod with 34 x 4 Goodrich tires carried on Booth demountable rims; in the case of the "four," however, the wheel sizes have been increased from 30 x 3½ to 32 x 3½.

In the matter of equipment, there is very little to be desired, the list in each case including demountable rims, Stewart speedometer, electric lighting and engine starting system, electric horn, silk-mohair top with Jiffy curtains and envelope, adjustable windshield and a complete set of tools, spare parts and a tire repair kit.

Welding that Requires Caution.

Electric or oxy-acetylene welding not infrequently is suggested as an additional safeguard against trouble when a breakage has occurred and has been repaired by some purely mechanical method, such as bolting the parts together. While welding may, and will, prove beneficial in many cases, it sometimes may result in warping or, possibly, injury to the metal, and before the work is carried out there should be an understanding as to whether or not there is any risk of this sort.

Protecting Storage Battery Terminals.

Old suggestions often are as good as new ones; and in view of the increasing number of electric lighting, starting, horn-blowing, gear-shifting and other installations requiring storage batteries, there is much to be gained by remembering that battery terminals and leads, well cleaned and then smeared with vaseline, will resist corrosion where unprotected metal will disappear rapidly under the active action of the acid solution.

Draining the Gasolene Filter.

A good way to make sure that the gasolene filter is drained at least as often as it should be is to use it when gasolene is required for washing a spark plug or any such purpose. Of course, there are many cases where this is the obvious, if not the only way; but there are others where there is a more convenient draincock that may cause the drain on the filter to be neglected.

Simple Emergency Compression Relief.

The cranking of a big motor that is difficult to start can be greatly facilitated by inserting bits of sheet metal under the valve stems to partly relieve the compression, taking care, however, that the lift is not increased sufficiently to cause the valves to strike when they go up and either break or bend.

"Gassing" that is Destructive.

The less "gassing" there is when a battery is being charged the less wear there will be on the active material on the plates. Excessive gassing dislodges the material and proportionately shortens the life of the plates, the material being wasted.

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AMATEURS DEFEAT "PROS" IN CHICAGO RELIABILITY

Rain Causes 18 Entrants to Dwindle to Three Starters, of Whom One Forms Trade "Team"—Much Mud Makes Going Hard.

The amateur team of the Chicago Motor Club overwhelmingly defeated the Trade team of the same organization in the two-day reliability run that brought them together during Friday and Saturday, 17th and 18th insts., and though the total score was 190 to 2, its size serves as no indication of the number of drivers on each team. George Spangle at the wheel of a Midland was the sole representative of the Trade, and but two cars, a Ford, piloted by F. J. Meyer, and a Cole, driven by L. W. Owen, completed the amateur team. These three drivers were the only ones who competed for the A. J. Banta trophy over a slippery, sloppy route that led the tourists out to Sulphur Springs and back.

Of course, it was planned that a great many more than three competitors should at least start in the contest, and because only these three came to the starting line quite a few Chicago motorists are more than ordinarily free with the expression "cold feet." The whole trouble was that it rained torrents the day before the date scheduled for the start, and as a result only three entrants had the courage to face the roads which their own experience proved to be in truly terrible condition.

Those on the original trade team who backed out at the last moment were W. E. Stalnaker (Premier), Thomas J. Hay (Hupmobile), Harry C. Watts (Renault), Charles E. Gregory (Chalmers), H. N. Fowler (Ford), and J. G. Tennant (Abbott-Detroit). The members of the amateur team who failed to put in an appearance at the starting line were Reed L. Parker (Stearns-Knight), J. S. Patterson (Midland), Geo. A. Lillig (Stearns), George Knabe (Pierce-Arrow), Owen O'Malley (Rambler), Chas. M. Reynolds (Locomobile) and E. M. Porter (Haynes).

On the outbound run to Sulphur Springs the "going" was particularly hard; it was so hard in fact that it was long after the noon hour before the trio of hardy tourists reached the end of their 80-mile jaunt. Despite this fact, however, both Spangle and Meyer completed the first leg without incurring penalty. Owen was not so lucky, and a motor stall resulted in the two points penalty chalked up against his team. During the return journey, Spangle, on whom those of the trade team who did not essay the trip had pinned their hope, was compelled to make a long stop because of some sort of ignition trouble, for which he was debited the 190 points that stand against his team.

That the result of the run will sound the death knell of contests promoted by the Chicago Motor Club is the expressed opinion of not a few intimately connected with club affairs, for, it is pointed out, the lack of interest reached its culmination in the practical abandonment by the members of the Trade vs. Amateur run.

More World's Records Made at Brooklands.

Those 11 world's records that Hancock set up on the Brooklands track in England on September 18th are world's records no longer. In a successful assault on both the 1,000-mile and the 12-hour records, Chassagne, Resta and K. Lee Guinness, who took turns driving a Sunbeam car on October 1st, set up new figures for the ones established by Hancock, 1,000 miles being covered in 11:06:38.87, which is at the almost incredible speed of 90 miles an hour.

The new 12-hour record is 1,078 miles 460 yards, which is at the rate of 89.95 miles an hour; the old 1,000-mile record was made with an Argyll car and stood at 13:05:57.68, which figures out at 76.36 miles an hour, and the old 12-hour record, made with the same car, was 914 miles 604 yards, which is at the rate of 76.2 miles an hour. It is worthy of mention that the new 12-hour record is ahead of the best existing record for 14 hours by more than six miles. The car with which the new records were made has six cylinders measuring 80 x 149.6 mm., or 3 5/32 x 5¾ inches, and is rated at but 23.8 horsepower, according to the British formula. The new records, which are better than the old ones by as much as three miles an hour at the start and some 13 miles an hour at the finish, are as follows:

Two hours, 195 miles 189 yards; three hours, 287 miles 856 yards; four hours, 380 miles 628 yards; five hours, 473 miles 464 yards; six hours, 566 miles 589 yards; seven hours, 653 miles 147 yards; eight hours, 748 miles 247 yards; nine hours, 840 miles 1,533 yards; ten hours, 910 miles 969 yards; eleven hours, 989 miles 828 yards; twelve hours, 1,078 miles 460 yards; 1,000 miles, 11:06:38.87.

Cyclecar Reliability Contest Abandoned.

That cyclecar reliability tour that was to have been promoted by the Chicago Motor Club and would have led the tourists around Lake Michigan commencing Monday, 20th inst., has shared the fate of Around-Lake-Michigan tour for full-fledged cars; it has been called off. The reason for its abandonment is given out as lack of entries, only four owners having signified their intention of inaugurating the sport.

MUD HAMPERS DISBROW IN SHORTENED ST. LOUIS MEET

Wet Track Causes Abandonment of Half of Program and Prevents Establishment of Records—Takes Two of Six Events.

J. Alexander Sloan—the name being practically synonymous for Disbrow, Heinemann, Hearne and Endicott—invaded that part of St. Louis, Mo., in the immediate vicinity of the Maxwelton mile dirt track on Sunday, 19th inst., and, unusual to relate, every existing world's record remains intact. But it was neither Sloan's fault nor the fault of Disbrow, Heinemann, Hearne and Endicott, that no new figures were set up. It was the fault of the track, which was sloppy because of the superabundance of rain which had made necessary the abandonment of Saturday's meet. It was so sloppy, in fact, that Sloan called off the first three numbers of the program, leaving six, and of the six Disbrow only took two.

But after all, the glory was pretty well spread around, for Heinemann got his two races and so did Endicott, though the best that Hearne could do was a couple of seconds. As usual, Disbrow essayed a mile flight and completed it with his Simplex in 58.61, which is pretty fast considering the condition of the track. Heinemann took both the five- and three-mile races, Endicott got the Australian pursuit race and the so-called novelty race, from which nearly all the novelty had been rubbed, and Disbrow took both the handicap event and the five-mile heavy car race. The summary:

Five miles, class C, 231-300 inches—Won by L. Heinemann (Case); second, T. Milton, Jr. (Mercer); third, H. Ullbrecht (Case). Time, 7:20.11.

Three miles, class E, under 450 inches—Won by Heinemann; second, H. Hearne (Case); third, W. Endicott (Case). Time, 5:08.75.

Five miles, class E, under 600 inches—Won by Disbrow (Simplex; second, Gus. Monkmeier (Staver-Chicago); third, Endicott. Time, 5:32.20.

Australian Pursuit race—Won by Endicott (four miles); second, Ullbrecht; third, Heinemann. Time, 4:58.54.

Novelty race, three miles (two miles run, wheel changed, and third mile run)—Won by Endicott; second, Hearne. Time, 3:58.15.

Three miles, free-for-all handicap—Won by Disbrow; second, Endicott; third, Monkmeier. Time, 3:04.37.

One mile time trial by Disbrow. Time, 58.61 seconds.

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BEATING THE HARDWARE MAN AT HIS OWN GAME

Accessory House Which Keeps Its Customers from Buying Accessories in the Hardware Store by Stocking "Automobile Hardware"—Principles Which Underlie the Invasion of the Rival Trade.

The boy in the Little Lord Fauntleroy suit never dreamed of the come-back when he sought to amuse himself by slapping the plebian lad in the eye. But when the plebian child returned the favor that was—well, it was contrary to Hoyle, as the young aristocrat understood the book.

Of course, the analogy isn't perfect, perhaps, but something of the same thing is happening and is likely to happen to a still large extent in the accessory and hardware trade. In these cases the hardware man may be said to have delivered the first slap, which the accessory man is in a way to return in full measure.

Problem of Competing with Hardwareman.

For some time it has been emphasized by those who are familiar with conditions in the automobile trade that the hardware man has, in a measure, "got the jump" on the automobile trade in the handling of accessories and has taken a considerable business that should by rights remain in the hands of automobile dealers, garagemen and accessory stores. How to regain the lost foothold has been a problem for those who have been desirous of preventing the inroads of the hardware dealer upon the accessory trade.

For many dealers and garagemen the problem is still as acute as ever, but in the metropolitan accessory trade there is one concern which has been combatting the hardware man with his own weapon, which has been beating him at his own game, and with resultant profit to itself and immeasurable satisfaction and convenience to its customers. This is the Auto Supply Co., of Broadway and West 59th street, of which the head is George H. Robertson, who is not yet forgotten as the winner of the 1908 Vanderbilt Cup Race. Robertson's fame as a racing driver is not his only asset, for the real success of the supply company is due to its being operated in a businesslike manner, and to this also may be attributed the adoption of hardware as a feature of the enterprise.

This company realized long ago that the hardware man was quite likely to take up accessories and that if he did so the regular accessory and supply houses would suffer; the problem was and is how to keep the hardware man from taking a slice of the accessory trade, and this supply company decided that it was by living up to its trade motto, "Everything Pertaining to Automobiles." The course of reasoning was that if the car owner was to be kept out of the hardware store it must be made possible for him to buy anything he needed in the accessory store, and the result was that the Auto Supply Co. immediately began to add hardware to its stock.

Stock Has Grown as Demand Increased.

The accessory stock has always been kept complete and the hardware stock has grown in proportion as the trade has become educated to the fact that it does not have to go to the hardware man to buy automobile hardware and has learned to ask for what it wants in the accessory store. Today a car owner can go to the Auto Supply Co. and buy anything he needs in the accessory line, practically anything in the automobile hardware line, and can select from an assortment of motoring clothing that is more complete than is carried in many out-and-out clothing stores. The stock is selected upon the principle that it is policy to have everything the motorist wants—caps, robes, gloves, cushions, coats, all accessories and everything he is likely to require in hardware from nuts to bar steel and bronze.

Briefly expressed, the theory is this: The motorist needs certain articles of hardware. If he goes to a hardware store for them he may buy accessories there, too. If he can get anything he wants in the accessory store there is little likelihood of his ever going near the hardware store, wherefore the accessory man will get all he is entitled to—and then some.

Harvey Adams, vice-president of the supply company, who has been in a measure responsible for the growth of the business, makes plain the extent to which any other dealer may pick a few hardware plums when he describes the development and operation of the business.

Business Now in Three Departments.

"We began putting in hardware seven years ago," he said, "and put in but a small stock at first, but now we run the store in three separate departments—sundries, hardware and clothing—and the former takes up the entire basement. We were further down Broadway in those days, and while we carried what we considered a good stock of accessories we paid little attention to hardware as we stock it today. When a man wanted anything in that line we sent him to a hardware dealer or sent a boy after it.

"This demand by our customers was the beginning of our hardware business. There is a quantity of such goods which is required by car owners and garagemen, and since these people were in our store so much we wondered why it wouldn't be well to stock the wares for them instead of turning this trade away. We began by putting in those things for which we had the greatest demand and added to the stock as other demands arose, until we can furnish nearly anything that is called for.

"To the man who is going into this busi-

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ness on an extensive scale, an essential is, I should say, a capable hardware man as the head of the department. It is not enough to leave it in the hands of an accessory man if the business assumes any considerable scope, for accessories are one thing and hardware is another. The average hardware man or salesman will not fill the bill, for the trade in an accessory store should be handled in a manner which is not characteristic of the other line of business.

Delays Encountered in Hardware Store.

"I had this brought home to me when we were sending our customers outside for the things we didn't have. We would send a boy to a hardware store a couple of blocks away and he would be gone what seemed an unnecessarily long time. Finally I decided to go myself and see if I couldn't make the trip as quickly as I thought the boys ought to. I went to a hardware store one day and asked for what I wanted. Before I asked for it I had to wait until a clerk got ready to wait on me, and he didn't seem to care whether I got what I was after that week or next.

"After I gave him the order he shouted up a dumbwaiter to have it sent down from somewhere upstairs. The man upstairs certainly cared less about how long I had to wait than did the clerk, and I was rather impatient by the time the order was filled. I never said much to the boys after that when they were longer than I thought they ought to be. When we first began to stock hardware it consisted largely of hammers, pliers and things of that sort which any man is likely to want to use, and the department at that time didn't require any one man's whole time.

"But as it grew and became more extensive we felt the need of a real hardware man to put in charge of the department and we cast about for one. My experience in that one store was enough to convince me that an ordinary hardware man was not what we wanted, but we finally found one who possessed the proper qualities of salesmanship and who knew hardware."

Stock Includes All Motorist Needs.

No genuine hardware store could look more like an establishment of that kind than does the basement of the Robertson quarters, where almost anything is obtainable. One class of goods consists of nuts, bolts, screws and such articles, and the assortment of styles and sizes is complete. Drawer after drawer is filled with them. Over in one corner are saws, hammers, and those tools which often come in handy or are a necessity in the care of a car. Grease cups, valves and similar parts occupy another section, while another part is devoted to oil and gasolene cans, funnels and pails.

"But we are adding to the stock all the time," explained the manager. "If we get one call for something we don't stock it, but if the call is repeated and there seems to be a demand, we put it in. That is how we have accumulated the entire stock.

"It will surprise you, the number of articles that are sold merely because the car owner happens to see them when he is buying something else. He may have come in to get a couple of bolts, and while he is here he may see a display of drills. That reminds him that he wanted a drill badly the other day, so he buys a drill. Maybe he notices a pile of canned paint or varnish or the stock of brushes; he often is made to remember that he has had it in mind for a long time to touch up a few spots on his car, so he buys a can of paint and a brush. There are countless things of that description which are sold in that way."

Displaying Wares Helps Their Selling.

Why they often are sold in this manner is not difficult to see when one visits the hardware store in the basement; it is operated on the same principle which is advantageous in any retail business—that of putting goods where the customer can see them. The paint brushes are kept in a cabinet of drawers and are arranged according to sizes, but upon the outside of each drawer is fastened a sample of the brushes which are inside. This not only enables the salesman to put his hand on the right drawer without studying the label, but it places the wares out into full view of the visitor to the store. Neither does it take extra space.

Many articles, such as S wrenches, are attached to a display board which carries a full set from the smallest to the largest size. The man who wants a wrench doesn't have to guess at what he wants; he can put his finger on the exact size with certainty. These boards are used also for window display; they are easily portable, and when they have served their turn in a show window are taken back to the basement and hung upon the wall to resume their duties as silent salesmen.

With such a variety of stock as this it is comprehensible why a hardware man is needed to manage the department, and it also is not difficult to understand that he must likewise have an understanding of automobiles. If a car owner visits the hardware department and asks for a piece of tubing for his gas lighting line, the ordinary hardware man might not select the size with readiness, but the hardware-accessory man—who is essentially a new and coming species—knows offhand just about what the car owner needs. The same thing applies with cooling system hose and many other things.

The display windows are a feature which make the Automobile Supply Co. well known in the metropolis; an expansive front extends along the Columbus Circle side and is devoted mostly to hardware and accessories, while the Broadway side, a smaller space, generally is devoted to a seasonable exhibit of motoring clothes—hats, caps, gloves, robes, coats and other warm and cosy-looking apparel.

Accessory Business on Up-to-Date Plan.

The feature of the Columbus Circle side during the past week has been a moving exhibit advertising Weed chains. It is one of several advertising "stunts" secured by the Weed Chain Tire Grip Co. in a window trimming contest it recently promoted and consists of a "rag man" on a skeleton chassis which slides and skids as a little electric motor does its work. The Automobile Supply Co. recently produced the "Safety" window suggested in Motor World of August 21, which called the motorist's attention to the need of safety for his car and the many devices which have been designed to aid him in achieving that end.

The accessory department, which is on the street floor, and is, of course, the main portion of the business, shows further adherence to the motto, "Everything Pertaining to Automobiles," in its offering of such wares as Thermos bottles, cushions, picnic lunch outfits and other things which the car owner wants and might go elsewhere for if he didn't see them displayed in his favorite accessory store. The stock of clothing is especially complete, and aside from his suits the motorist can find anything he requires. Probably one thing which causes customers to come back a second time is the sales service; prompt treatment is insisted upon and no one is allowed to wander at large without receiving attention from a salesman.

Suggests Electric Heater for Cars.

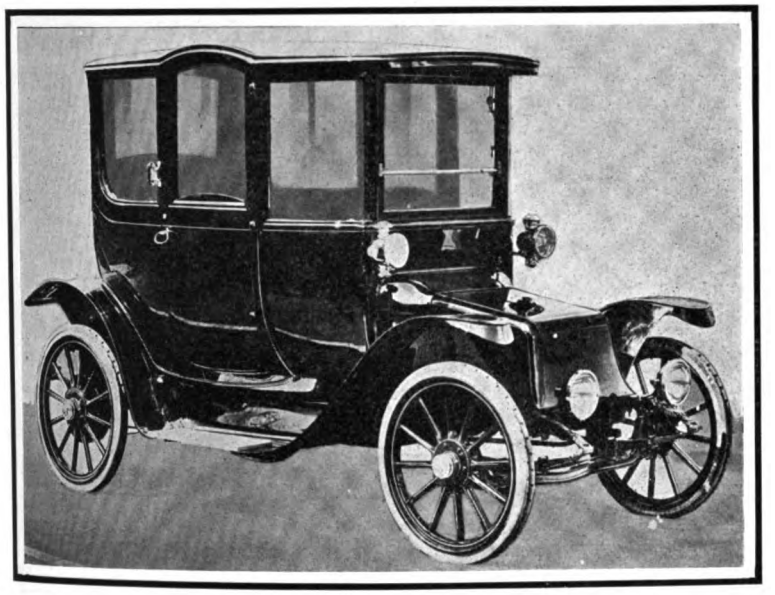
The store even has two counter mirrors for the benefit of women customers. In discussing the accessory trade in general Adams ventured the suggestion—which is free to anyone who cares to consider it—that there is a demand for an electric heater or foot warmer, easily attachable and selling at a reasonably low price. At present the most satisfactory device, he stated, is the charcoal warmer for tonneaus and closed cars. But with so much electrifying of cars, he said he believed a heater which could be connected by the mere insertion of a plug in a connection would prove popular if it didn't cost too much. He carried his suggestion still further and said he thought it would be well to consult first with the generator and battery makers as to whether present electrical systems would carry such a warmer.

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LIMOUSINE MODELS ONLY IN CHICAGO ELECTRICS

Method of Slinging Battery Improves Appearance and Riding Qualities —Cars Have Slow Speed Motors and Direct Drive.

Recognition of the fact that the electric is particularly well adapted to city work under all sorts of conditions and in all sorts of weather, has caused the Chicago Electric Motor Car Co., of Chicago, to adhere to its practice of building only enclosed models —vehicles, however, that can be so thrown open by the lowering of windows as to afford ample opportunity for the play of the breeze in warm weather, while the roof shuts out the beating sun. Three models are built on two chassis that are alike except in the matter of wheelbase, one having a measurement of 96 inches between the axle centers and the other 104 inches.



CHICAGO ELECTRIC LIMOUSINE SHOWING ARCHED ROOF

The longer chassis is used for model 142, which is built for five passengers and is of the limousine type. The rear seat is 54 inches wide and easily accommodates three passengers, while the driver occupies a single Pullman type seat on the left side, in front of the main seat and in line with the middle of the door. The fifth passenger is carried on a folding seat at the right of the driving chair. Both doors can be used for entrance and exit, the seating arrangements being such that the doors are not blocked. The interior body length is 78 inches. The steering has been so worked out that the car can be turned completely around in a street 38 feet wide—a matter of importance in city work, where space for making turns often is at a premium.

Model 141 is on the short wheelbase chassis and, aside from its length, differs from the other car chiefly in the matter of seating arrangement; like the model 143, it carries five passengers. The rear seat for three passengers is 53 inches wide and the driver sits on the left end. The other two passengers occupy a front seat facing backward; this seat is 45 inches wide and 20 inches deep. It is intended that in heavy traffic, or under any circumstances in which the driver's work is difficult, the seat directly in front of the driver shall be left vacant, so that his vision will not be interfered with. The interior length of the body is 70 inches. The 96-inch wheelbase makes possible a turn in a 34-foot street. Model 143 is similar to model 141 except that the right front seat is a revolving chair, so that the occupant can turn in any direction. Otherwise the specifications are the same.

The general characteristics of the bodies are the same in all models. There is no high battery box in the rear. The battery, which consists of 40 cells, 11 plates, MV Exide, is divided, there being 20 cells in the rear and 20 cells in front. All the battery weight is carried between the axles, there being no battery weight over the axles. The extremely low placing of the battery brings the center of gravity very low, and the battery boxes are out of sight, though the cells are accessible.

Over the doors the roof is arched; and this not only looks well and gives extra headroom when entering or leaving the car, but in rainy weather the water drains off to the sides and does not drip at the doors. All body panels are of aluminum and the framing is of hard wood. The mouldings are of what is known as the full belted variety and permanent aluminum deck drains are provided.

In the construction of the chassis all work is done with a view to the use of solid rubber tires; steels are selected and the springs designed with this object. The framing at the sides is of pressed steel, unusually wide and 4 1/16 inches deep, and there are no less than eight heavy cross members stiffened and braced by gusset plates. The rear axle is a Timken, full-floating and roller-bearing throughout; the I-beam front axle is of the same make. As to the springing, it goes without saying that it is about as perfect as it is possible to make it; the construction of the car as a whole lends itself well to the good springing.

The motor is a Westinghouse, slow speed, series wound, and is direct connected to the rear axle by a straight line drive with propeller shaft and double universal joints; there is no gear or chain reduction between the motor and the rear axle drive. The slow speed motor is said to possess advantages in hill climbing, and its low speed also has a beneficial effect in the matter of bearing wear, commutator life and so on. The controller also is a Westinghouse product and provides for five speeds forward and reverse. A magnetic blow-out is installed. All contact surfaces are large and the wiring throughout is heavy. As the controller is very close to the motor the wiring is short and is accessible through the flooring. No resistances are used; all speeds are running speeds, and the successive controller positions give 5, 8, 15, 18 and 22 miles an hour.

The control lever and the steering lever are horizontal; the controller lever can be locked with a Yale lock. One ratchet lever operates the brake and an emergency electric cut-off and there is also a foot brake, without ratchet. The reverse cannot be thrown in until the brake has been applied. The brakes proper consist of internal expanding shoes on the rear hubs 14 x 2½ inches, and a 10-inch drum on the propeller shaft. On all models the wheels are 36 inches in diameter front and rear, with 4-inch dual tread clincher tires. The tread in all models is of the usual standard width, 56 inches.

Valve Stems that Cause Squeaks.

A source of squeaking that is rather common with a good many motors of not the latest type is a dry valve stem, most likely to occur on the exhaust side. Such a squeak often is hard to locate exactly, but a little prodding around with an oilcan while the motor is running will quickly stop it by lubricating the dry places.

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FORD WAGE SCALE REVISED; PAYROLL INCREASED 13%

New Classification of Operators Responsible for "Raises" Given Practically Every Workman—A Grading System Adopted.

Due to the adoption of a new wage scale, growing out of the institution of a grading system, the wages of practically all employes in the Ford Motor Co., in Detroit, have been increased, the total representing a 13 per cent. enlargement of the company's payroll.

As explained by John R. Lee, who made a study of the subject in a number of the large industrial plants in this country, where there were originally six general grades of labor in the Ford establishment, three subdivisions have been outlined in each general grade.

"As an illustration, in our so-called 'C' grade, we classify all machine operators and car assemblers," says Lee in explaining the new system. "As a subdivision in 'C' grade we have beginners, those just starting to work. Men entering our employ in this grade all receive the same wage. As soon as the man has demonstrated his ability and becomes an operator of average proficiency, it is expected that his foreman will advance his wage by a certain fixed sum and his skill rating to 'C2,' and again after the man has advanced from an operator of average ability to a first-class workman another raise in pay is given him and his skill rating advanced to 'C1.' There is a still further subdivision in the two grades (B and C), which include approximately 80 per cent. of our help, and this grade is a grade or rather a rate of wage paid on account of long service. An employe who has been with the company two years or more, and is a first-class workman, receives special consideration for his service over and above the wage paid for a first-class workman in his grade.

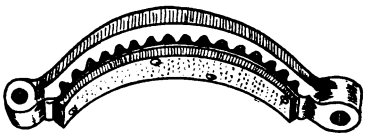
"In place of the very large number of rates that were paid throughout the shop, we will use under the new plan but eight different amounts, ranging from a minimum of 26 cents for ordinary laborers to 54 cents for skilled mechanics, and in each general grade and subdivision thereof a certain fixed rate applies, which may not be deviated from."

Kirkham Takes up Cyclecar Engines.

The Kirkham Motor Mfg. Co., of Bath, N. Y., has added a cyclecar engine to its productions. It is of a two-cylinder, 30-degree, air-cooled, four-cycle, V-type, having a stroke and bore of 3 inches and developing 9 horsepower on the block. It utilizes mechanical valves and it may drive either by a belt on each side of the crankcase or can be used with a clutch integral with the flywheel; or for friction drive the flywheel is employed as one of the friction disks. The engine is equipped with a special Kirkham timer with the idea of dispensing with the magneto and bringing the price within reasonable bounds.

To Increase Life of Brake Lining.

Where there is friction there must be heat, and if there is a good deal of friction and no provision is made to get rid of the heat, trouble is a strong probability. In the case of automobile brakes, there is a great deal of friction when the brakes are in use, and as there is not, as a rule, any means for disposing of the heat otherwise than by natural and slow radiation, the friction material suffers and its life is shortened. Such, at least, is the position taken by a foreign



FERODO BRAKE LINING

concern that has brought out a radiation device which is shown in the accompanying illustration and is styled "Ferodo."

Under the friction material there is a band of steel about 3/16 inch thick, and between the steel band and the outer band there is a strip of thin steel having transverse corrugations. The metal conducts the heat, and the air circulating freely between the corrugations carries it away. It is stated that the radiating device increases the life of the friction material 130 per cent., while the resilient corrugated backing improved the brake action.

Holt "Caterpillar" Wins Contest.

The annual tractor contest recently held at Magdalene, Argentine, was a triumph for American machines, which took the first four prizes, while a French tractor took the fifth. The prizes were well worth competing for; the first, which was taken by a 60-horsepower Holt caterpillar, built by the Holt Mfg. Co., of Stockton, Cal., and Peoria, Ill., was $15,000, the second $10,000 and the third $5,000. The contest was held under the direction of the Argentine government. The Holt machine also won the Russian tractor contest at St. Petersburg.

Effect of Benzole in Cork Floats.

It has been found that benzole has the effect of causing cork to swell, so that in carburetters using benzole it is necessary to use metal floats.

NEW YORK-CHICAGO TRIP UNDERTAKEN BY ELECTRIC

Battery-driven Roadster Expected to Finish in a Week—Charging Arranged for in Advance—Fast Run Made from Boston.

Long distance runs under electric power apparently have the effect of creating a desire for more of the same thing. At any rate, the recent run of 258 miles—from Boston to Burlington, Vt.—made by a Bailey electric roadster driven by Col. E. W. M. Bailey, as stated in Motor World of October 9, was followed by a trip from Boston to New York made in a single day and at an average speed of 21½ miles an hour. This, however, was merely a sort of prelude to a really ambitious tour, for on Sunday last, October 19, Bailey and his faithful roadster started from New York bound for Chicago, and if it is found possible to adhere to the schedule arranged the windy settlement should be reached on Saturday, October 25.

It is expected that the car will average from 120 to 190 miles a day, according to road and other conditions. In accordance with Bailey's expressed opposition to the idea of making the longest possible runs on a single charge, the battery will be replenished at every point where recharging is needed and where current for the purpose is available. Arrangements for charging have been made in advance, as far as possible, and of course the facilities for this work will have a very material effect on the success of the tour. Poughkeepsie will be the first stop for current, while Rochester is scheduled to be passed on the second day, the route leading through Buffalo and to Erie for the night stop. It is planned to reach Cleveland on Wednesday, Toledo on Thursday, South Bend on Friday and Chicago on Saturday. Night letters announcing the progress made are to be sent to the automobile department of the electrical show at Grand Central Palace.

This Car Has a Dozen Cylinders.

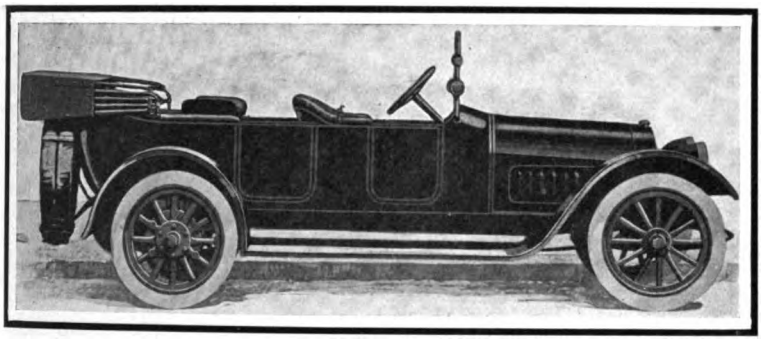
The latest Sunbeam racing machine is a 12-cylinder car rated at 47 horsepower, and that its multitudinous cylinders manage to pull at least fairly well together is indicated by the speed the machine attained on the Brooklands track. In a handicap race of 8½ miles, the "twelve apostles" pulled the car along at an average speed of better than 110 miles an hour, and the speed on the stretches is said to have been 120 miles an hour. The motor was not at that time properly tuned up, so that even more speed is expected.

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LEFT STEERING ADOPTED ON LATEST McFARLAN "SIX"

Single Chassis in Newest "Series"—Seven Body Types Mounted—Compressed Air System Improved and Retained.

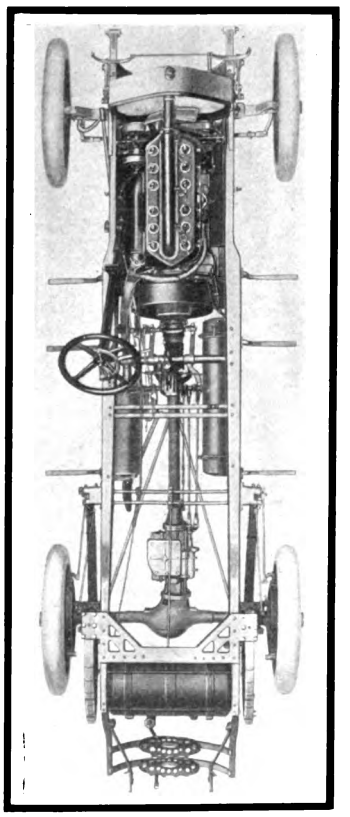
When a manufacturer of automobiles so far settles his mechanical problems that he anticipates no radical changes—barring the coming of some engineering upheaval that will turn the present order of things topsy-turvy—he usually has also settled upon a characteristic outward appearance that distinguishes his car from the cars of other makers, and, under the circumstances, if he is wise he will depart from that individuality of appearance as little as possible in order that as his car has been known, so it will continue to be known. And this evidently is the way the situation is viewed by the McFarlan Motor Car Co., of Connersville, Ind., for though numerous detail improvements have been made, the characteristic features have been retained and anyone who knows the McFarlan "six" of the last series will know the "six" of the new series.



SIX-PASSENGER McFARLAN "SIX" SHOWING SLOPING HOOD

The word "series" must be used with reference to bodies so far as the latest McFarlans are concerned, for there is but one chassis—there were three previously, all "sixes"—on which seven bodies are mounted. The McFarlan people have selected all that was best in all the older chasses and worked them into the latest model, as far as possible, together with such good things as have been added recently to the long list of mechanical helps to pleasant motoring.

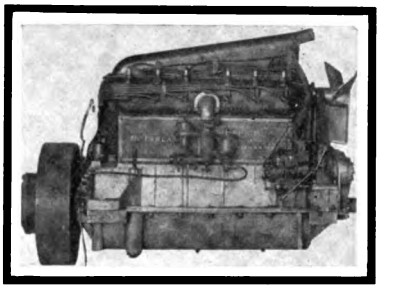
The fact that the McFarlan car heretofore has been steered from the right side and that its builders were strong advocates of that arrangement, makes it reasonably clear that there must be extremely good reasons for left steering, for now the steering wheel has been moved across the car: the levers are centrally placed, as before. Aside from this, perhaps the most momentous change in the car is the adoption of three-quarter scroll elliptic springs in place of full ellipticts, and their clipping under the axle—that is, underslung—instead of above. The lower half of the spring is 56 inches long, which means that the car is easy riding, assuming that the springs are as long on quality as they are on longitudinal measurement—which is a safe assumption. Hartford shock absorbers are fitted, with their arms extending transversely—that is, in the plane of the axle rather than in the plane of the springs. The front hanger of the rear spring is formed integrally with the casting that carries the bearing for the brake cross shaft.



McFARLAN "SIX" CHASSIS

while the end of the half spring on the top is clipped to a lateral extension of a heavy steel plate that extends clear across the frame and serves as a big, strong gusset and brace. The front springs are semi-elliptics, and are over-slung.

The driver of the new McFarlan car has no excuse for ill-adjusted brakes, for they can be adjusted while standing by the car. It is not even necessary to stoop down to get at the rods, for there is a little door in each mudguard that gives access to the parts as well as to the front hanger of the rear spring. The brake toggles have been redesigned to give the bands an even pressure all around the drums; the rods are short and stout and not liable to break.



INTAKE SIDE OF MOTOR

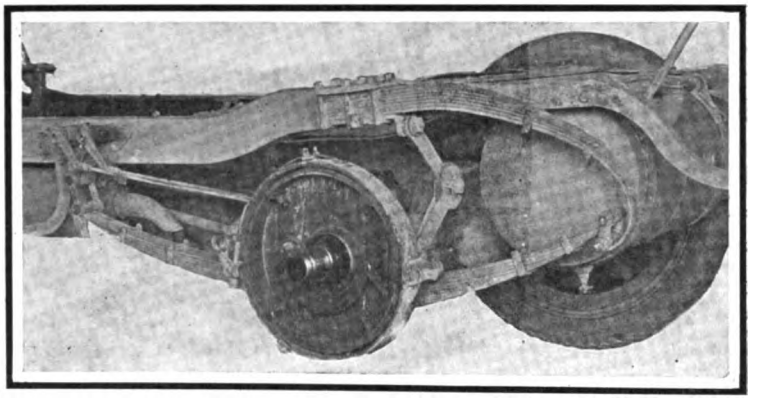
The McFarlan car is equipped with an electric lighting system with a motor-driven generator for furnishing the required current. The generator, the size of which has been increased in the latest model, is "a big, husky instrument," to use the words of the makers, and now runs at crankshaft speed. It is coupled to the shaft that drives the water pump. But though the car has an electric lighting system, it has no electric starter. It is a crankless car, however, for it has a compressed air starter of the two-unit type, there being a four-cylinder air pump—of new design—and a separate air motor. Air is stored in a tank under a maximum pressure of 150 pounds to the square inch and is sent to the cylinders through a rotary distributer that works on the same principle as an ignition distributer, except that there are ports instead of contacts. A button on the dash controls the starting system. The pump is thrown into driving connection with the engine by hand when the air gauge on the dashboard shows that the pressure in the tank—which, incidentally, is larger than formerly—is getting low.

The pump is automatically lubricated by the same system that lubricates the motor, and so requires no special attention in this respect. Air pump and generator are mounted together on a single bracket, which is removable. Thus either of these machines can be gotten at without difficulty, while their removal leaves the water pump acces-

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sible. And the ball coupling between the generator and air pump cannot get out of alignment. Another improvement consists in replacing the mechanical governor formerly used to regulate the output of the generator with a magnetic governor that is said to require no lubrication and no attention to keep it in proper condition.

Then there are other improvements. There is a new radiator suspension, the radiator being hung on trunnions instead of being bolted to the cross member of the frame. Steering has been made easier, from a muscular point of view, by the employment of ball-bearing steering knuckles. The magneto is a Mea. The windshield is of the built-in type and requires no auxiliary supporting devices—it is self-supporting, so to speak—and further, the top straps attach to the windshield instead of being carried down to the front of the car.



McFARLAN REAR CONSTRUCTION SHOWING SPRINGS AND FUEL TANK SUPPORT

The motor has its cylinders cast in a single block; it is of the T-head type and its smooth, clean design is due largely to the fact that the intake and exhaust manifolds are partly cast with cylinders, so that a lot of external piping is not required. Similarly, the water manifold is a single piece bolted to the top of the motor. All the valve stems are enclosed. The magneto and carburetter are on the right side and the air pump, electric lighting dynamo and water pump on the left and in line, the air pump at the rear and the others in the order named. A big, flexible tube carries the exhaust to the muffler, and troubles due to vibration at this point are eliminated. The motor is hung on a three-point suspension with the single point at the front.

As for the general lay-out of the car, it has undergone no change, as a bird's-eye view of the chassis shows. The multiple disk clutch runs in a casing built into the flywheel and operates in oil. The angularity of the enclosed propeller shaft is taken care of by Spicer universal joints. Bolted to the rear axle casing is the gearset. In the last series, in which there were three models, two had the gearcase in the rearward position and one had a unit power plant; now the rear axle location is standard. The gasolene tank, at the rear of the frame, is cylindrical instead of having the oblong cross-section that characterized some of the older machines. The air tank, having nearly double the capacity of the oil tank, retains its position on the right side of the chassis, under the frame.

A slight slope to the hood modifies the angle between the hood and the cowl and improves the general appearance of the car not a little. All the bodies have been made larger than on previous models, and a new four-passenger coupe body, of which the McFarlan people are quite proud, has been added. No side- or dash-lights are fitted to the cars of the new series; instead, there are double-filament headlights. The instrument equipment is mounted, in modern fashion, on an instrument board under the rear edge of the cowl. The outfit of the car includes Collins "one-minute" curtains and, of course, the usual equipment of things that are considered necessary to the enjoyment of a car of up-to-date design and construction.

Rushmore Starter Develops 375-Pound Pull.

As an indication of the power developed by some of the modern types of electric engine starters, and of the energy absorbed by them in developing it, statistics just made public by the Rushmore Dynamo Works of Plainfield, N. J., are of more than passing interest. Attached to a four-cylinder Simplex engine having cylinder dimensions of 4⅞ x 6½ inches and compression pressure of 85 pounds, a Rushmore starter "spins" the gasolene engine under ordinary room temperature conditions at the rate of 100 revolutions a minute with the throttle at its maximum opening, and during a test continued to maintain this speed for a period of 45 minutes on a standard 6-volt, 120-ampere-hour storage battery. During the operation, the electric motor consumed current at the rate of 90 amperes with the voltage at 5.6. The Rushmore starter was attached to the engine through the usual gearing on the flywheel and with the usual 1¾-inch armature pinion developed a pull of 27.4 pounds which, considering the gear reduction, is equal to a pull of about 375 pounds at the flywheel rim. The electric motor itself, however, weighs but one ounce over 30 pounds.

Proposes Public Double-Decked Garage.

After a subway garage was recommended as a solution of Chicago's parking problem the suggestion was taken up in Detroit, but the project never took definite form; now a semi-submerged double-decked garage is proposed by F. G. Baxter, an architect, who would have his proposed structures erected in certain public squares and available boulevard spaces.

His suggestion is a double-decked, ornamental parking place in Cadillac square, replacing the present waste that is used principally as a resting place for bums, and possibly in Washington boulevard, Grand Circus park and other downtown breathing spots.

"The structure I propose would consist of two stands, one six feet below the street level and the other six or seven feet above," said Mr. Baxter. "The incline leading to the upper platform or out of the lower would be easily climbed by motor cars. Cars would enter from one end.

"The parking platforms would be 70 feet wide and 260 feet long. Cars would pass up the center until reaching an open space along the side, where they would back into the space and line up at an angle along the side. This would give about 30 feet in the center for maneuvering cars. A traffic officer could direct this."

Genuinely Unusual Engine Starting Idea.

Carrying the engine starter idea probably a little further than it ever has been carried before, the makers of the British Jackson car have evolved an arrangement whereby the engine is started automatically by the weight of the driver as he enters the car. In its simplest aspect, the system involves the use of a movable step which is connected with a rack and pinion mechanism operating directly on the clutch shaft. When the driver steps on the step, the rack is brought into engagement with the pinion and the weight of the driver when moves the step downward, pushing the rack over the pinion and starting the motor. Immediately the driver lifts his foot off the step it is spring-returned to its normal position, taking the rack out of engagement with the pinion.

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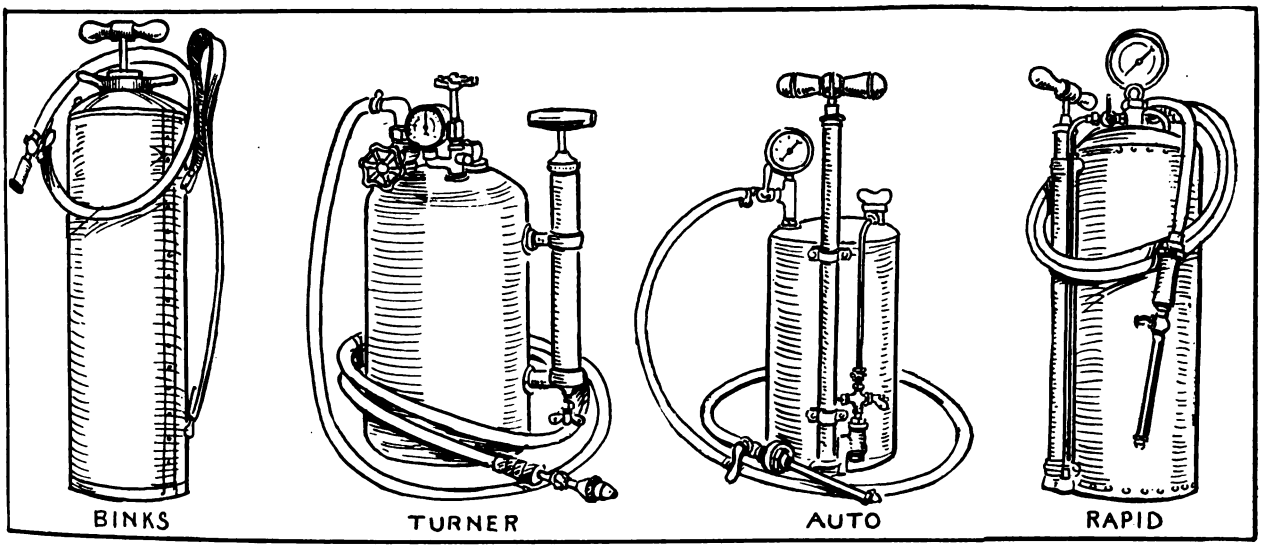
DEVICES THAT FACILITATE ENGINE CLEANING

Construction and Operation of Miniature "Sand" Blasts That Use Cleaning Fluid Instead of Sand—Their Wide Range of Applicability and Their Superiority Over the Pail of "Gas" and the Brush.

If cleanliness is next to godliness in that portion of the universe not given over to, or inhabited by, man's mechanism—meaning inanimate mechanism—it is certainly next to efficiency in the world of whirring wheels and slippery bearings; dirt breeds friction and wear, and both of these undesirables are the arch enemies of efficiency. Q. E. D.

In the modern garage, the modern tendency toward cleanliness daily is becoming more marked. Which is as it should be, for dirt is the abhorred of all but a very few, whose opinion is not worth much anyway. And in the opinion of the clean majority it is not only the dirt that is in plain sight that must be cleaned away for the good of every ones' peace of mind and the efficiency of machinery, but the dirt that lies hidden from casual gaze—beneath the engine hood, for instance—also must be cleaned away, for ever if it does not offend the eye it is practically certain to offend the engine in reasonable time.

It is one of the defects of the modern cooling system that road dust and dirt continues to be invited inside by the fan, and as it is not likely that the defect will be remedied at least for some little time—if it is ever remedied—nothing remains but to apply the cure in lieu of the prevention. As nearly everyone knows, every engine is more or less oily. It is not easy to keep the outside of the engine entirely free from oozing oil and undoubtedly it is quite impossible to do so in the majority of cases. Hence, the dust that is drawn in through the radiator by the fan and distributed impartially over the engine "sticks around," to use an expressive idiom. To be rid of it, and to be rid of it quickly and easily and in a thoroughly satisfactory manner is the problem that presents itself to the thoroughly up-to-date garage proprietor with his eyes on the little things.



FOUR TYPES OF GARAGE MOTOR CLEANERS THAT DIFFER ONLY IN DETAILS

The Danger of Sloppy Cleaning.

To the average garage mechanic, however, the problem is no problem at all, for, being unaccustomed to look upon the economical side of things that the business garage proprietor finds now more than ever to be so essential to any kind of success, a pail of gasolene and a stiff brush or a wad of waste makes a very potent appeal. That this antiquated method has its drawbacks, not to say its dangers, is apparent on the surface, for aside from the high cost of fuel, which brings a tear to every eye, the board of fire underwriters is likely to look at the practice askance even if the boss does not. Nevertheless, the pail of gasolene and the brush has become more or less of an institutiton in a great many garages, despite its bad features, only two of which have been outlined.

The successful operation of the modern garage requires the use of modern apparatus. That it no longer is possible for a garage proprietor to exist under the old methods that permitted the proprietor of a stable to make his wife all sleety with diamonds has been demonstrated too often, as is made plain by the records of the bankruptcy courts, to require reiteration. Efficiency—business efficiency and mechanical efficiency—is the keynote of present-day methods, and not until this fact has been assimilated by the garage proprietor can he be expected to "make a go of his job."

The cleaning of engines that always require cleaning is not a very big item on the books of any garage, but it is an item that is plenty big enough to warrant thoughtful attention; and, incidentally, it is the ones who give thoughtful attention to the little things who eventually find it necessary to give attention to big things.

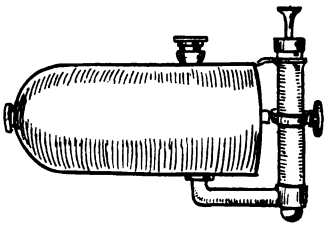
To get back to engine cleaning: There are two ways in which this can be done, and of them the old way—the dirty, sloppy, dangerous brush-and-pail-of-gasolene way—is too well known to need further discussion. The modern way to tackle the job, which is a mean little job in any case, is to do it

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with modern apparatus that has been designed especially for the service and therefore can be expected to operate in an economical and thorough manner. To take the place of the brush and the pail of "gas" there have been developed within a comparatively short space of time seven or nine different types of engine cleaners that are as far ahead of the brush and the pail as the automobile is ahead of its prototype of ten or a dozen years ago.

Sand-Blasts Using "Gas" for Sand.

In effect, these devices all are exactly the same, and there is but one principle involved in all. To be brief, they all act exactly like a sand blast, only sand is not used, of course. In all of them either gasolene or kerosene takes the place of the sand in a sand blast under ordinary circumstances, though it is quite possible to "load" them with soap-suds or soda-water or anything else that may appeal to the operator or that may be useful in removing accumula-



STEVENS MOTOR CLEANER

tions of dirt and grease from parts that are not easy of access even with a brush and a pail of "gas." All of the various devices of the kind are a little bit different, of course, though none is even a little bit complicated despite its external appearance.

Take the Binks, for instance, that is produced by the Star Brass Works of Chicago, Ill. It consists of nothing more complicated than a strong galvanized iron tank carrying a pump which is mounted on and screws in with the cover at the top through which the cleaning liquid, whether it be gasolene or kerosene or anything else, is poured in. To operate the device, about two gallons of gasolene, for instance, are placed in the tank, the top is screwed tight and 30 or 40 strokes given the pump handle. The result is that the air pressure drives the gasolene out in a very finely divided spray under considerable pressure and that the spray very effectually "cuts" the grease and the dirt and washes it away. Obviously, the very small amount of gasolene that is used evaporates very quickly and there is none of the slop and the danger always present when a brush, dipped in a pail of gasolene, is none too carefully wielded by a mechanic anxious to finish an always dirty and never appealing job.

Aside from the economical value of any device of the kind which uses but a tiny fraction of the gasolene ordinarily used under other circumstances, its value to the owner of the engine is not difficult to see. Where an attempt is made to clear away the accumulated oil and dirt by slopping gasolene over the engine, there is grave danger that a good deal of the grit will be washed into the bearings with disastrous



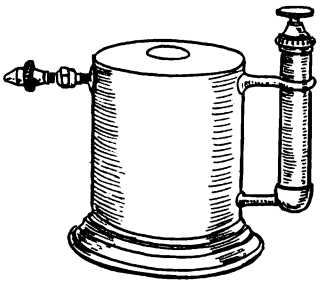
WAGNER KEROSENE WASHER

results. If, on the other hand, the dirt is permitted to remain on the engine, it is quite as likely to work itself into places where it should never accumulate.

Operating Precautions That Are Needed.

It is obvious, of course, that when any of these pressure engine cleaning devices is used with gasolene great care must be taken that no open flame is near the operator, for it needs no explanation to make plain that the fine spray of fuel and air is more inflammable than is gasolene contained in a can. Also, inasmuch as most pressure cleaners will force the gasolene 10 or 12 feet, whatever flame or danger of fire there is must be proportionately further away from the nozzle than it ordinarily would be away from the pail of gasolene. They must, in fact, be used out of doors whenever possible, unless, of course, they are loaded with some non-inflammable cleaning fluid.

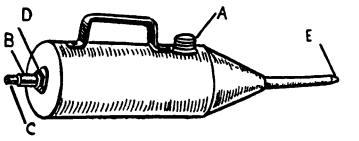
The Turner motor washer, which is



TURNER HAND WASHER

manufactured by the Turner Brass Works of Sycamore, Ill., is quite a little different from the Binks, as the accompanying illustrations show. Whereas the pump in the Binks is contained within the tank, in the Turner it is mounted outside. The tank itself is made of drawn steel and it is extremely doubtful if it would be possible to blow it up with the pump that forms part of the equipment. So that the operator may know when he has sufficient pressure in the tank, a gauge, reading to 100 pounds, is supplied. The hose is 10 feet long and is fitted with an adjustable nozzle that will deliver either a fine stream of cleaning fluid or a spray.

The Auto-Cleaner, which is made by the Bishop & Babcock Co. of Cleveland, O., and distributed by the Cleveland Faucet Co., is quite like the Turner, the essential differences being made plain by the picture. The pump in the Auto-Cleaner is slightly larger than it is in the Turner and the cleaning nozzle is longer, so that it can be reached into places ordinarily quite inaccessible to the brush-and-gasolene operator. The outfit complete consists of a three-gallon seamless galvanized steel tank with the hand pump attached—though connections can be supplied to attach the tank to an air compressor system provided there is one in the garage—gauge and safety valve, 10 feet of flexible hose and the nozzle which is adjustable. In use, the tank is pumped to about 80 or 100 pounds pressure and either gasolene or kerosene can be used with very nearly equally good results. The Rapid, which is produced by the Rapid Auto Cleaner Co., of Newark, N. J., is another that differs from the three previously



ROMORT PRESSURE CLEANER

described only in details. The pump, as may be seen in the picture, is mounted at the side of the tank, the outfit including a pressure gauge, the necessary flexible hose and an adjustable nozzle.

Scope of Usefulness that is Wide.

Needless to point out, the field of usefulness of such devices is not confined to the cleaning of engines, though doubtless they are most useful for this purpose. They can be used quite as effectively in cleaning chassis, for instance, and the intricacies of gearsets and differential mechanisms. Radiators also suggest themselves as a fertile field for the exploring spray from one of them, and when the liquid has been exhausted the tank can be used as a blower to induce some of the dust accumulated by upholstery to settle somewhere else. For chassis parts such as wheels and axles and fenders, the cleaner can be loaded with soap-suds or a solution of washing soda and water and the activities of the man with the sponge and the hose rendered shorter and more productive of good results.

Of course, all of the devices that have been described are rather large and are more suited for garages where a great

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amount of engine cleaning is done than they are for smaller garages where only an occasional job of the kind is done. For the smaller garage and for the private owner who objects to soiling his hands and his clothing on work that should be done at regular intervals for the preservation of the engine, several smaller cleaners of a size suitable to be carried in the hand are available, four of them being illustrated herewith.

The first, which is the Turner, and like its larger brother is produced by the Turner Brass Works of Sycamore, Ill., suggests not a little the more or less common gasolene torch that forms a part of the equipment of nearly every garage. In operation, it is exactly like the larger Turner, which is to say it is partly filled with either gasolene or kerosene or soapsuds, pumped up by means of the pump that forms the handle and it is ready for work. The whole thing holds only a quart of liquid and therefore is quite light and can be poked into all sorts of out-of-the-way places where a larger and heavier machine might not prove so useful. The nozzle is adjustable to throw either a stream of liquid or a fine spray.

The Stevens cleaner, which is made by the Stevens Mfg. & Supuly Co., of Chicago, Ill., differs considerably from the Turner both in shape and in the manner of operation. Like the Turner, however, it can be adjusted to throw a spray or a stream. The tank is made of seamless brass and holds one quart of liquid. Pressure is raised by means of the little pump that forms part of the handle and the stream is released by pulling out a tiny button that normally is held in place by the grasp of the hand on the handle.

Devices that Work Without Pumps.

In both construction and operation, the Romort engine cleaner, which is distributed by the Union Hardware & Metal Co., of Los Angeles, Cal., differs from all of the others. The air and the gasolene or cleaning fluid, whatever it may be, do not mix except at the nozzle. The device itself—looking more like a great cartridge than almost anything else—is shown by the accompanying picture. In charging the device, the cleaning fluid is poured in after removing the cap marked A. The tank contains no compressed air, the source of supply being attached at the threaded stud C at the end opposite to the nozzle end. D is the nut that holds the air attachment in place. When the knurled nut B is turned, the nozzle E is opened and at the same time the air passes through the tank, picks up the cleaning fluid at the nozzle and issues as a fine spray (F). As with the others, the stream can be adjusted.

The Wagner cleaner, which is produced by the Wagner Specialty Co., of 18 West 63rd street, New York City, is another that differs from all of the others, the essential difference this time being that the device has been constructed primarily for kerosene and the makers caution against the use of gasolene with it. The device itself scarcely requires description, it is so simple. It is shown in its entirety by the accompanying picture. Essentially it consists of nothing more than two small tubes drawn into one at the nozzle. One of the tubes is connected to the source of air supply, six pounds pressure being sufficient to operate the washer, and the other draws kerosene from any convenient receptacle.

Electric Ignition for Cigars.

It doesn't need any argument to prove to anyone who ever has tried to light a "smoke" in a moving automobile that it isn't



CENTURY CIGAR LIGHTER

the easiest thing in the world to do with a match. Therefore it ought to follow that anything that will make the lighting of said "smoke" a simple and easy matter ought to get a real welcome from smoking motorists.

With the "Century" electric cigar lighter shown in the accompanying picture all that is necessary is to hold the end of the little device against the end of the cigar, press the button and "start the pump." Electricity produces a hot glow in the "business end" and the tobacco is soon ignited. The lighter is made by Mabey's Electric & Mfg. Co., of Indianapolis, Ind.

Winter Care of Tires and Tubes.

That metal is perishable under certain conditions is also too true to admit of debate, and it follows therefore that tires are more likely to suffer from neglect when cars are laid up for the winter than are other parts of the car. The proper way to insure against trouble when they are brought out of their state of seclusion, according to L. C. Rockhill, manager of the automobile tire department of the Goodyear Tire & Rubber Co., is to remove them from the rims and store them somewhere, piled one on the other and not standing up, where the temperature is neither too high nor too low. A dark room is preferable, of course, for light has as deleterious effect on rubber, but if one is not available, the casings should be covered with canvas. If plenty of French chalk is sprinkled between the tubes and the casings, the tubes can be left in place, though they should be inflated just enough to make them stand up round. The better way, however, is to treat them as the casings are treated—pile them one atop the other, partly inflated, and cover them with canvas.

When Equipping for Double Ignition.

It is one of the advantages of the T-head type of motor that with the majority of them it is quite possible, with the aid aid of a little ingenuity and some tools, to equip them with an extra set of spark plugs and so make surer ignition and in some cases materially to increase the power output. Where the plugs are over the intake valves, for instance, which is their usual location, a second set of plugs can be placed over the exhaust valves in place of the compression relief cocks, of course, but as there are several makes of combined cocks and spark plugs on the market this need cause no great amount of worry. The one thing to remember when an extra set of plugs is added is that it is absolutely essential that the gaps in both sets be exactly the same, for unless this is so the benefit of the second set will be very problematical. High tension current always has taken and always will take the path of least resistance. Hence, if the gaps in one set of plugs, or in one plug, is smaller than in the other plugs to which they are connected, the spark at the plug or plugs with the wider gaps will be very weak and feeble and will have little effect in "setting off" the mixture. With most magnetos, the manufacturers furnish a guage and it is a good plan to set all the plug gaps to this gauge. Obviously, when a second set of plugs is added, each plug in the set is connected directly to the terminal of the original plug in the same cylinder.

Lamps Should Be Cleaned When Lighted.

A precaution that is said to add to the life of a tungsten filament lamp by preventing breakage of the delicate threads is to clean the glass while the lamp is burning; the filament is less likely to break when hot than when cold. Feather dusters are considered harmful and should not be used about the lamps.

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1,061,015. Tire Tool. Gustav Schaefer, New York, N. Y. Filed Dec. 26, 1911. Serial No. 667,626. (Hooked tire removing tool.) 1 claim.

1,061,020. Attachment for Vehicle Lamps. Elwood H. Shinn, Masonville, N. J. Filed Dec. 18, 1912. Serial No. 737,423. (Lamps moved by steering gear.) 4 claims.

1,061,053. Head and Tail Light Control. Willard G. Davis, Nicholasville, Ky. Filed April 13, 1912. Serial No. 690,552. (Lamps connected to be moved by steering gear.) 1 claim.

1,061,062. (Measuring-Pump. Lloyd D. Freeland, Portage, Wis. Filed April 3, 1911. Serial No. 618,538. (Crank-operated fuel or oil measuring pump.) 17 claims.

1,061,086. Resilient Wheel. Hormidas Lafleur, Leominster, Mass. Filed Nov. 27, 1912. Serial No. 733,777. (Wheel with curved spring spokes and sliding guide spokes.) 1 claim.

1,061,087. Automobile Light-Controlling Device. Benjamin D. Lake and Nathaniel G. Marks, Springfield, Ky. Filed Aug. 28, 1912. Serial No. 717,553. (Lamps connected to steering gear.) 2 claims.

1,061,204. Tire. William T. Smith and Charles C. Royer, Bellefontaine, Ohio; said Boyer assignor to Myrtle Smith, Bellefontaine, Ohio. Filed March 19, 1909. Serial No. 484,503. (Tire with core of rubber disks.) 1 claim.

1,061,223. Counterbalanced Unloading Device for Trucks. Fred A. Cook, Portland, Ore. Filed Nov. 11, 1911. Serial No. 659,870. (Tilting truck body.) 6 claims.

1,061,272. Engine-Muffler. Clarence E. De Witt, Mount Jewett, Pa. Filed Nov. 29, 1912. Serial No. 734,112. (Muffler with removable frustro-conical sections.) 4 claims.

1,061,308. Explosive-Engine. Robert McKee, Philadelphia, Pa. Filed March 19, 1909. Serial No. 484,364. (Reversible four-cycle motor.) 15 claims.

1,061,310. Vehicle Spring. J. Walter Moore, Fort Edward, N. Y. Filed Jan. 14, 1911. Serial No. 602,700. (Coil springs and linkage system.) 2 claims.

1,061,313. Armored Pneumatic Tire. William Robert Morrison, Chicago, Ill. Filed Feb. 2, 1911. Serial No. 606,095. (Steel-clad pneumatic tire.) 4 claims.

1,061,342. Vehicle-Spring. Claud M. Waltz, Summitville, Ind. Filed Aug. 26, 1912. Serial No. 717,104. (Spring leaves with longitudinal grooves.) 3 claims.

1,061,344. Vehicle Wheel. Martin S. Weist, Sedalia, Mo. Filed June 26, 1912. Serial No. 706,053. (Telescopic spokes with cushioning coil springs.) 1 claim.

1,061,391. Tire-Patching Device. Gustave J. Martel, Chicago, Ill. Filed Sept. 7, 1911. Serial No. 648,134. (Means for attaching patching strap.) 1 claim.

1,061,396. Explosive-Engine. Harry W. Moore, Nebraska City, Neb., assignor to Ralph A. Duff, Nebraska City, Neb. Filed Sept. 13, 1911. Serial No. 649,010. (Engine with two-diameter pistons and cylinders.) 5 claims.

1,026,709. Automobile Headlight. Conrad Shermund and Raymond Alfred Mallett, Sacramento, Cal. Filed Nov. 22, 1911. Serial No. 661,750. (Headlights connected to steering gear.) 2 claims.

1,026,728. Steering Mechanism. Martin L. Williams, South Bend, Ind. Filed March 9, 1908. Serial No. 420,012. (Steering mechanism with cam-like movement.) 4 claims.

1,026,732. Apparatus for Distributing Fuel in Internal-Combustion Engines. Hans Th. Bruns, Nuremberg, Germany. Filed Jan. 24, 1911. Serial No. 604,496. (Pressure fuel feed system.) 5 claims.

1,026,749. Ball-Cage for Ball-Bearings. Hermann Kapper, Treptow, near Berlin, Germany, assignor to The Firm of Deutsche Waffen & Munitionsfabriken, Berlin, Germany. Filed Feb. 10, 1912. Serfial No. 676,838. (Two-piece sheet metal ball retainer.) 2 claims.

1,026,761. Fuel and Water Regulator for Steam Boilers. Robert Miehle, Chicago, Ill. Filed Sept. 26, 1907. Serial No. 394,605. (Thermostatic steam boiler control.) 11 claims.

1,026,783. Wheel. Walter Black, Mendota, Ill. Filed Nov. 5, 1910. Serial No. 590,841. (Wheel with springs between inner and outer rims.) 2 claims.

1,026,803. Automobile-Tire. Ezra M. Hamilton, Willow Springs, Cal. Filed Dec. 17, 1910. Serial No. 597,937. (Wheel with transverse tubular cushions between tread and rim.) 2 claims.

1,026,810. Spring-Wheel. Joseph Kuehl and Joseph Stefanowski, Detroit, Mich. Filed July 1, 1910. Serial No. 569,897. (Wheel with springs between tread and rim.) 1 claim.

1,026,813. Hinge-Joint for Windshields. Peter N. Landine, Milford, Conn., assignor to The Rostand Mfg. Co., Milford, Conn.; a corporation of Connecticut. Filed Dec. 5, 1911. Serial No. 664,109. (Hinge with locking device.) 6 claims.

1,026,822. Resilient Wheel. Frederick C. Oldham, Brooklyn, N. Y. Filed Oct. 19, 1910. Serial No. 587,961. (Wheel with spring-and-plunger spokes.) 2 claims.

1,026,827. Propulsion of Motor-Vehicles. Henri Pieper, Liege, Belgium. Filed Jan. 23, 1911. Serial No. 604,225. (Electric vehicle control with means for charging battery from motor when coasting.) 5 claims.

1,061,807. Tire. William A. Binion, Newark, N. Y. Filed Nov. 22, 1911. Serial No. 661,701. (Cushion tire with springs and plungers.) 1 claim.

1,061,816. Demountable Rim. Joseph H. Champ, Cleveland, Ohio, assignor to The Standard Welding Co., Cleveland, Ohio, a corporation of Ohio. Filed April 5, 1912. Serial No. 688,574. (Q. D. rim and locking device.) 5 claims.

1,061,893. Transmission Device. Thomas H. Williams, Buxton, Iowa. Filed June 5, 1912. Serial No. 701,801. (Transmission with fluid control.) 20 claims.

1,061,905. Tire-Fastener. Luke G. Fleming, Tarrytown, N. Y. Filed Oct. 5, 1912. Serial No. 724,047. (Locking device for Q. D. rim.) 3 claims.

1,061,910. Automobile Number Carrier and Drop. George H. Hewitt, Jr., Jersey City, N. J. Filed Dec. 20, 1909. Serial No. 534,094. (Means for carrying and dropping automobile identification tags.) 3 claims.

1,061,927. Tire. Salvatore Scognamillo, New York, N. Y. Filed Sept. 25, 1911. Serial No. 651,206. (Tire with core formed of continuous coiled springs.) 1 claim.

1,061,938. Gearshifting-Lever Lock. Otto W. Hahn, San Francisco, Cal. Filed May 23, 1912. Serial No. 699,185. (Device for locking gear lever to H-plate.) 4 claims.

1,061,943. Automobile Transmission-Lock. Harvey M. Johnstone, Lincoln, Neb. Filed March 22, 1912. Serial No. 685,446. (Device for locking gear lever in neutral position.) 2 claims.

1,026,653. Combination Spark-Plug. William C. Brunt, Boston, Mass. Filed Dec. 9, 1911. Serial No. 664,752. (Terminal with insulating handle.) 8 claims.

1,026,662. Control of Vehicle Driving-Wheels. Felix A. Eisner, Rochester, N. Y. Filed July 10, 1908. Serial No. 442,927. (Hydraulic four-wheel drive system.) 16 claims.

1,026,667. Tire-Inflation Mechanism. Royal L. Foster, Fort Riley, Kans. Filed Nov. 26, 1910. Serial No. 594,350. (Tire inflating device carried on wheel.) 1 claim.

1,026,693. Fuel and Water Regulator for Steam-Generators. Robert Miehle, Chicago, Ill. Filed June 12, 1908. Serial No. 438,097. (Thermostatic boiler regulation.) 22 claims.

1,061,641. Folding Top for Vehicles. Elial M. Staples, Elizabeth, N. J. Filed Feb. 28, 1912. Serial No. 680,441. (Temporary support for automobile top.) 3 claims.

1,061,677. Transmission Speed-Reducing Gearing. Arthur King, St. Louis, Mo. Filed Dec. 21, 1911. Serial No. 667,149. (Planetary gear.) 4 claims.

1,061,716. Starter for Internal-Combushtion Engines.) David W. Anderson, La Fayette, Ind. Filed Dec. 28, 1911. Serial No. 668,334. (Distributer for fluid pressure starter.) 1 claim.

1,061,719. Engine Starter. Edwin D. Bangs, Milwaukee, Wis. Filed March 5, 1912. Serial No. 681,723. (Compressed air starter.) 2 claims.

1,061,722. Device for Shaping the Outer Casings of Pneumatic Tires. George Wilson Bell, Stockport, England. Filed July 25, 1912. Serial No. 711,382. (Tire mould.) 5 claims.

1,061,743. Dump-Wagon. Charles D. Heile, Oak Park, and Ernest George Snyder, Chicago, Ill., assignors to H. McFarlane & Co., Chicago, Ill., a corporation of Illinois. Filed Aug. 14, 1911. Serial No. 643,815. (Tilting body on turntable.) 2 claims.

1,061,756. Piston. Charles Y. Knight, Coventry, England. Filed Sept. 28, 1910. Serial No. 584,179. (Piston with removable outer sleeve below piston rings.) 2 claims.

1,061,759. Friction Transmission Mechanism. John W. Lambert, Anderson, Ind., assignor to The Buckeye Mfg. Co., Anderson, Ind., a corporation of Indiana. Filed May 31, 1910. Serial No. 564,151. (Friction transmission for four-wheel drive.) 2 claims.

1,061,775. Silencer for Engines. Charles H. Newton, East Orange, and Erwin S. Sanfield, Newark, N. J., assignors, by mesne assignments, to Standard Co., Torrington, Conn., a corporation of Maine. Filed Jan. 2, 1912. Serial No. 668,989. (Muffler with large expansion chamber and a single diagonal baffle-plate.) 5 claims.

1,061,798. Concrete Garage. Ralph F. Yourtee, St. Louis, Mo. Filed March 12, 1912. Serial No. 683,283. (Method of constructing concrete garage.) 1 claim.

1,061,796. Two-Cycle Engine. Alexander Winton and Harold B. Anderson, Cleveland, Ohio, assignors to the Winton Motor Carriage Co., Cleveland, Ohio. Filed Jan. 20, 1908. Serial No. 411,753. (Two-cycle motor with gas pocket in piston.) 6 claims.

1,061,799. Spring-Wheel. Benjamin Anderson, Gebo, Wyo. Filed Sept. 4, 1912. Serial No. 718,517. (Wheel with curved spring spokes.) 1 claim.

1,061,420. Shock Absorber. Herman H. Sunvold and Halfdan Larson, Sacred Heart, Minn. Filed July 1, 1912. Serial No. 707,030. (Strap and spring rebound check.) 1 claim.

1,061,450. Differential Mechanism. Arthur Coleman, Higgins, Tex. Filed Sept. 5, 1912. Serial No. 718,746. (Bevel differential for worm-driven axle.) 5 claims.

1,061,458. Vehicle Wheel. William Downham, Jr., Philadelphia, Pa. Filed July 1, 1911. Serial No. 636,352. (Tire seated in V-grooved rim.) 1 claim.

1,061,511. Piston-Pump for Automobile Fire Apparatus. Albert C. Webb, St. Louis, Mo., assignor to The Webb Motor Fire Apparatus Co., St. Louis, Mo., a corporation of Delaware. Filed Feb. 5, 1912. Serial No. 675,410. (Mechanically driven reciprocating fire pump.) 3 claims.

1,061,523. Tire Armor. John J. Bukolt, Stevens Point, Wis. Filed May 9, 1912. Serial No. 696,174. (Tire armor of jointed metal plates.) 7 claims.

1,061,524. Tire-Armor. John J. Bukolt, Stevens Point, Wis. Filed Aug. 8, 1912. Serial No. 714,045. (Tire armor of jointed metal plates.) 9 claims.

1,061,528. Valveless Two-Cycle Motor. Oscar Deprez, Brussels, and Armand Richir, Anderlecht-Brussels, Belgium. Filed Jan. 26, 1911. Serial No. 604,852. (Twin cylinder motor with common combustion chamber.) 8 claims.

1,061,537. Vehicle-Wheel. Lucien R. Gruss, San Francisco, Cal., assignor to Auto Compressed Air Wheel Co., Chico, Cal., a corporation of California. Filed March 16, 1911. Serial No. 614,822. (Wheel with cushion cylinders between hub and rim.) 9 claims.

1,061,536. Gasolene-Engine Starter. Daniel Fuhrer, Bluffton, Ind. Filed April 27, 1912. Serial No. 693,626. (Starter of the priming type.) 3 claims.

1,061,580. Elastic Wheel. Charles Adams-Randall, New York, N. Y. Filed Sept. 7, 1906. Serial No. 333,689. (Wheel with radial coiled springs around hub.) 2 claims.

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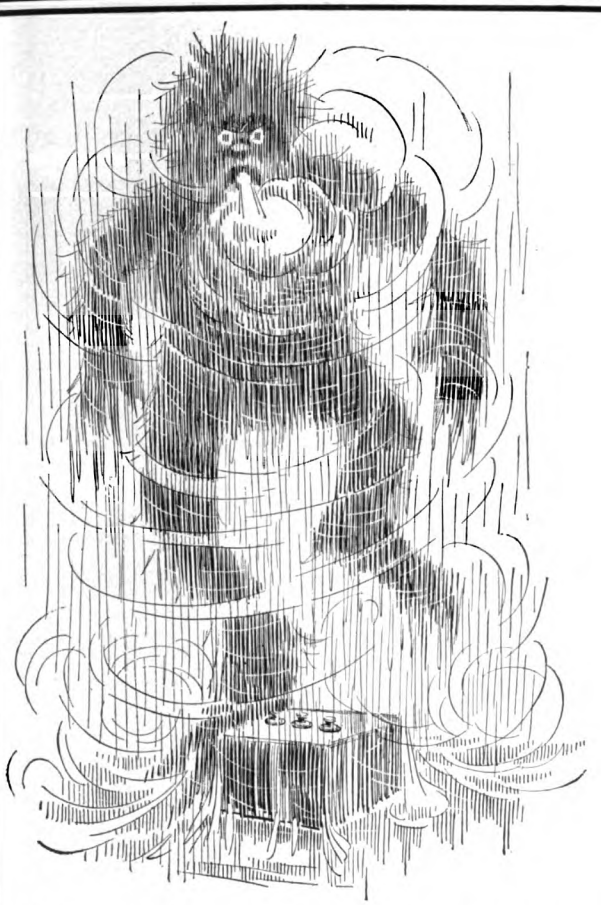
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Any Battery will start an engine in warm weather
You want a Battery that will do its work in all kinds of weather

The

GLBA

Storage Battery

has met Jack Frost many times and has always given service regardless of weather conditions.

Write us for full information

Willard Storage Battery Company, Celveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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NEW DEPARTURE BALL BEARINGS

American-Made for American Trade



The Proof of the Bearing Is In Its Service

The garage man knows better than anybody the comparative service merit of the bearings installed in motor cars he cares for and repairs.

We recently sent out letters to garage men throughout the country, asking them their opinion of New Departure Ball Bearings, based on their experience with it.

The complete summary of all responses received the first week shows that 96 per cent. of the garage men who have been using New Departures found them absolutely satisfactory. Many of them went as far as to say that it has proved superior to all others.

This remarkable evidence of the quality and efficiency of New Departure Ball Bearings is absolutely indisputable. Users of foreign-made ball bearings, whether garage men or manufacturers, should give this American-made bearing a thorough trial.

Every manufacturer, purchasing agent, superintendent, and designing engineer should have the Engineering Edition of the New Departure Ball Bearing Catalog and the brochure on "Bearing Friction and Its Elimination."

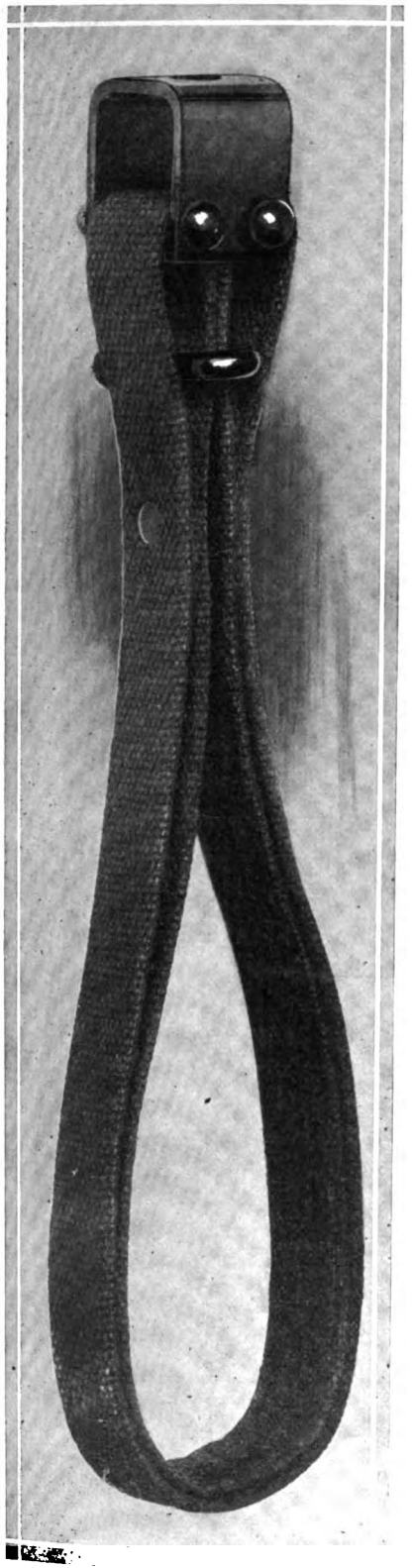
Every garage proprietor and superintendent should have the new Ball Bearing Garage Manual, now in its third edition. Either one, or all of these books, will be sent free on request. Drop us a line now.

THE NEW DEPARTURE MFG. COMPANY

BRISTOL, CONNECTICUT

Western Branch: 1016-17 Ford Building, Detroit

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The Gilmer Rebound Strap

WHY is it that other rebound straps are not put on cars like Gilmer Rebound Straps?---one-half or one inch only of play between the axle and the strap.

What other rebound strap has the strength to admit of this ideal method of application?

Gilmer Rebound Straps are standard on many American cars noted for their sturdy rear axle construction. One inch rebound play is all that is allowed on these cars so there can be no question as to the strength and efficiency of Gilmer Straps when many of America's foremost engineers have shown their preference for them---this in the face of more attractive priced competing goods.

L. H. Gilmer Co.

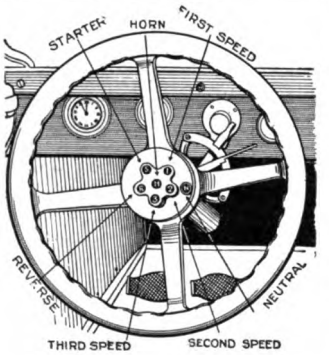
52 N. Seventh St., Philadelphia, Pa.

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Examine a HAYNES Car

with the Vulcan Electric Gear Shift the first chance you get

Every wide-awake auto dealer ought to keep up-to-date on automobile improvements. Here's a feature you want to see—a feature that's the biggest improvement the automobile has seen for many a year.

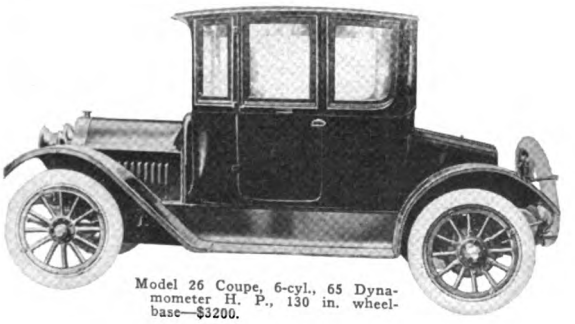


You merely press push buttons and electricity does the work

These push buttons are located in a small dial placed in the center of the steering wheel. There is a button for each of the three speeds forward, reverse and neutral, also buttons for starter and horn, as you see in the picture.

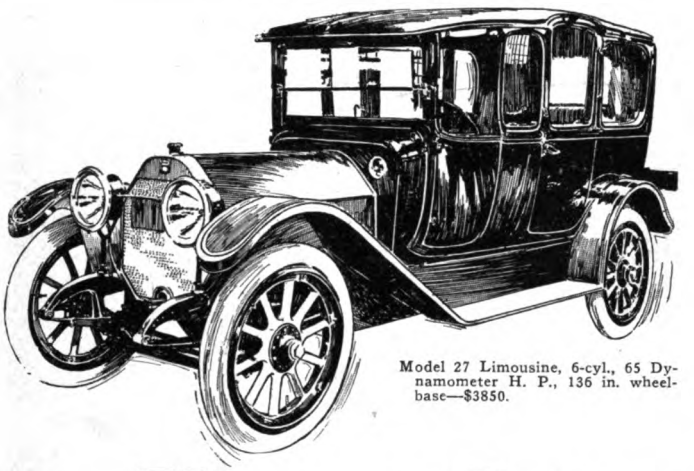
Exceedingly Simple— Both Electrically and Mechanically

The Vulcan Electric Gear Shift is very simple, both electrically and mechanically. You probably know what electro-magnets are — they are nothing more or less than iron bars wound with electric wires. When an electric current is sent through the wires the iron bars become powerful magnets. When you press a push button controlling any of the gears and depress the clutch, the electric current is sent through the electro-magnet controlling the gear you want shifted, and the shift is instantly made with a pull of 150 pounds.



Model 26 Coupe, 6-cyl., 65 Dynamometer H. P., 130 in. wheelbase—$3200.

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Model 27 Limousine, 6-cyl., 65 Dynamometer H. P., 136 in. wheelbase—$3850.

After you've seen this big feature in the HAYNES Car, you'll understand why it's making such a hit

You'll agree that the Vulcan Electric Gear Shift is the slickest piece of work-saving mechanism you've seen for a long time, and the biggest automobile improvement.

Bigger than other successes of recent years

The self-starter was a great thing, so was electric lighting. But here's a greater feature. Starting the car is an occasional need—lighting the lamps takes place even less frequently—but the gears are shifted time and time again every time the car is in use. The device, therefore, that entirely eliminates the throwing of the gears by hand and removes the danger of stripping the gears, is far more important than either of these features.

Haynes Dealers are making a big clean up

Without the Vulcan Electric Gear Shift Haynes cars would be great cars. Their reputation for reliability and power is a matter of common knowledge. They are the product of 20 years' automobile-making experience. They have everything in the way of comforts and conveniences that makes driving a delight, and owning a car a lasting satisfaction. The table of features given below will convince you that the Haynes from every standpoint is a most desirable car.

Leading features of the latest models

Specifications of the New Haynes

Motor—Bore 4¼ in., Stroke 5½ in. L-head **Haynes**. Cylinders cast in pairs. **Model 26, A. L. A. M., 43.35** H. P., Dynamometer 65 H. P. **Model 27, A. L. A. M., 43.35** H. P., Dynamometer 65 H. P. **Model 28, A. L. A. M., 29.9** H. P., Dynamometer 48 H. P.
Weight—Model 26, 3800 lbs.; **Model 27, 4000 lbs.; Model 28, 3400 lbs.**
Cooling—Centrifugal pump and pressed steel fan.
Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.
Ignition—American Simms Magneto.
Carburetor—Stromberg.
Lubrication—Splash and gravity feed.
Control—Left hand. Vulcan Electric Gear Shift.
Transmission—Selective Type, three speeds forward, one reverse.
Steering Column—Worm and worm gear type.
Clutch—Haynes contracting steel band.
Rear Axle—Full Floating Timken on **Models 26 and 27**; McCue, Model 28, Gurney Bearings.
Front Axle—I-Beam. O. H. steel heat treated.
Wheels—Artillery type. Funk demountable rims.
Hand lever shift optional at $200 reduction.

Tires—Models 26 and 27, 36 x 4½. **Model 28, 34 x 4.**
Springs—Front Semi-elliptic 39⅛ x 2, rear 48 x 2.
Brakes—15¼ external and 15 internal Models 26 and 27. 12 and 16 internal on **Model 28.**
Finish—Indiana dark blue body. Pacific Tour gray, optional
Gasoline Feed—Pressure. Automatic feed.
Upholstery—Buffed leather—deep cushions.
Starting and Lighting—Leece-Neville electrical system.
Cowl-board Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge, and speedometer. Models 26 and 27 have rim wind clock.
Other Standard Equipment—Top, top cover, mechanical tire pump, rain vision ventilating windshield, **Vulcan Electric Gear Shift**, two large electric head lights, electric side lights, electric tail light, full dash equipment, electric starter, generator, 12 volt, 60 ampere hour storage battery, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim, and Collins curtains. Models 26 and 27 have shock absorbers.

The Haynes Automobile Company

1 Main Street, Kokomo, Indiana

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STANDARD OF THE WORLD

ROYAL——MODEL——OHIO



R. E. NORTHWAY *of the Manufacturing Department*

HI



C. D. PAXSON *of the Sales Department*

Talk to you thru the OHIO on the Keynote of Automobile Success, "Concentration and Elimination:"

The two vital points in connection with the marketing of Automobiles at the present condition of the business are the QUALITY of the car and the PRICE. We believe that the keynote of Automobile success for both dealer and manufacturer is CONCENTRATION and ELIMINATION.

After twelve years of selling experience covering the entire United States, and by having my finger on the pulse of the trade during all this time, I feel that I know just what the public wants, and that is, A car of Quality and Reliability at a popular price. I have had experience in every stage of the industry, passing up every rung of the ladder as Driver, Repairman, Racer, Owner, Agent, Distributor and Manufacturer, and as such I know that there are just fourteen things that constitute the IDEAL Automobile, and these fourteen things are: MATERIAL, CONSTRUCTION, POWER, RELIABILITY, SIMPLICITY, DURABILITY, LINES, FINISH, RIDING, QUIETNESS, SERVICE, DESIGN, CO-OPERATION, and PRICE, all of which are concentrated in the ROYAL OHIO Models for 1914, and the production of such an ideal car will give to the Agent a car that will be an easy and ready seller. For a car to be a ready seller it must have behind it some striking feature that stands out prominently, and I don't think there is a factory in the world that is making a popular priced car who has the valuable asset that we have in the person of Mr. R. E. Northway, for he is today recognized as one of the greatest engineers in the country; his name is an absolute guarantee of quality and reliability.

His knowledge and experience has brought our factory up to the highest plane of efficiency by concentrating all his efforts and ability on two models, thus eliminating all unnecessary expense from a manufacturing standpoint. From a marketing standpoint we have eliminated three-quarters of the selling expense by one selling organization handling the entire output of four different factories, and consequently we are able to place on the market a car for $1,275.00 that cannot be duplicated at the price, and producing a Six-cylinder Model for $1,985.00 that is the equal of any car on the market at $2,500.00.

C. D. PAXSON.

To manufacture the MOST PERFECT Automobile at the LEAST possible cost is the one great aim of Automobile manufacturers, and to do this it requires, above everything else, KNOWLEDGE, ABILITY, EXPERIENCE, CAPITAL, and CONCENTRATION.

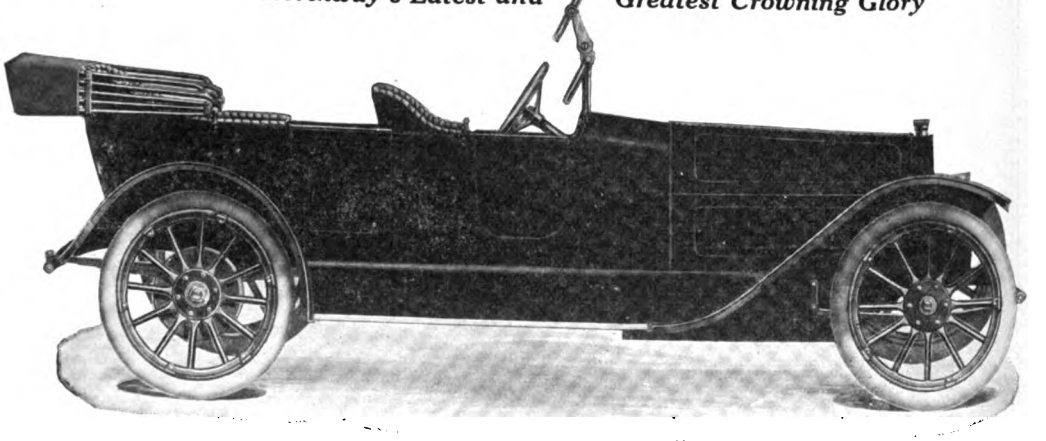
After years of experience and exhaustive tests and expensive experiments as the founder of the Northway Motor Company and original designer of that Company, I am now producing my very latest and what I believe will be my greatest success. I am endeavoring to produce in our two 1914 models, cars that both you and I will be proud of. I am using nothing but the very best material obtainable, employing the most skilled mechanics, and, above all, I am concentrating my ability, efforts, resources and capital on two models only, for I believe we can and are producing a better car at $1,275.00 by concentrating on it than we or any other factory could build for even $1,500.00 if we undertook to build four or five models.

My greatest aim is to make this one of the most efficient production factories in the country, so as to make it possible for us to produce a car of quality and reliability at a popular price, such as is being demanded by the public, and I honestly believe that no better cars are built for the money than we are producing in our ROYAL OHIO models for 1914. We have the facilities, the ability, and the capital to produce and manufacture the car.

Yours very truly,
R. E. NORTHWAY, Gen. Mgr.

Crescent Motor Company, Cincinnati, Ohio.
W. T. Hunter, Pres.
Wm. Pabodie, Sec'y-Treas.

Northway's Latest and Greatest Crowning Glory



ROYAL MODEL, $1,985

MOTOR—Six-cylinder, 4 x 6. AXLE—Full floating on annular bearings. TRANSMISSION—Four speeds ahead and one reverse. CLUTCH—Multiple disc. CONTROL—Center and left hand drive. SPEEDOMETER—Warner, flush. TIRES—35 x 4½ and 36 x 4. WHEEL BASE—132 inches. ELECTRIC STARTER, LIGHTS and HORN. RIMS—Demountable.

ROYAL 6-CYLINDER MODEL, $1,985

OHIO MODEL, $1,275

MOTOR—Four-cycle, 4¼ x 4¾. AXLE—Full floating on annular bearings. TRANSMISSION—Three speeds ahead and reverse. CLUTCH—Multiple disc. CONTROL—Center. SPEEDOMETER—Stewart. TIRES—34 x 4. WHEEL BASE—116 inches. ELECTRIC STARTER, LIGHTS and HORN. RIMS—Demountable.

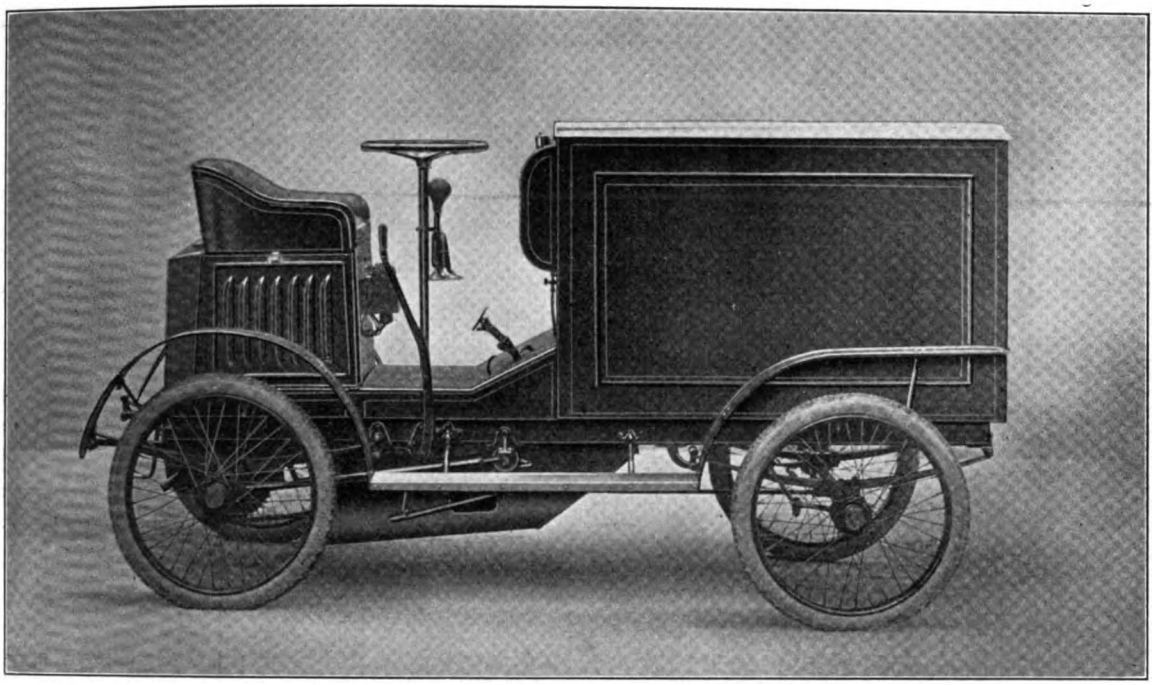
We are now ready to contract with good, reliable, live, wide-awake dealers and distributors on this greatest of all lines.

Address all Sales Correspondence to
C. D. PAXSON, Gen. Sales Mgr.
1900 Euclid Ave., Cleveland, Ohio

Export
BELLMORE & TOOMEY
10 Bridge St. New York City

Factory
THE CRESCENT MOTOR CO.
W. T. HUNTER, Pres., Cincinnati, Ohio

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AN INSTANTANEOUS SUCCESS

SINCE THE FIRST ANNOUNCEMENT OF THE

MOTOKART

in the columns of the Motor World our orders have far exceeded capacity. We have been compelled to temporarily limit the acceptance of further orders pending the extension of our manufacturing facilities.

Now, with greatly enlarged capacity, we beg to announce to the trade that in thirty days we will be in a position to fill all demands and make prompt shipments to all parts of the country.

The Motokart is the leader in a new field, one that offers exceptional advantages to the dealer. Straight merchandising, no trading for second hand cars, a positive public demand and a liberal margin of profit are among the features that commend the Motokart to experienced dealers.

Note these specifications:

3⅝ x 4 in. Two Cylinder, Four Cycle, Water Cooled Motor, Friction Drive, Pressed Steel Frame, Semi-elliptic Springs, 26 x 2½ in. Wire Wheels, 69 in. Wheelbase, 44 in. Tread, Box Body 51 x 32 x 32 in., Load Capacity 400 to 500 pounds—and then consider the SELLING FEATURES: Water Cooled Engine, No Gears to Strip, Small Traction Area, facilitating handling in crowded streets; Easy Spring Suspension protecting fragile merchandise, Metal Body, Large Cubical Box Area, Low Tire and other Maintenance Cost, Resilient Easy Running Wire Wheels, and last, but not least, the PRICE—$400.00, practically a Dollar a Day for a year.

Write now for territory—before the other fellow

TARRYTOWN MOTOR CAR CO., Inc.

Factory: Tarrytown, N. Y **Office: 1790 Broadway, N. Y. City**

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Did you ever notice the axles of an automobile bounce up and down going over a rough road? This shock, strain and twisting is borne by the bearings of the axles and transmission.

Hyatt Roller Bearings cushion and absorb shocks, relieving gears and shafts of excessive strain.

The hollow flexible roller of the Hyatt Bearing is responsible for this great saving in wear and tear.

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request

"Hyatt Quiet Bearings"

HY·FLEX·ROL

HYATT ROLLER BEARING CO.
DETROIT, CHICAGO
NEWARK, N.J.

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Four or Five Combination, Phaeton, Touring Body Type,

$2975

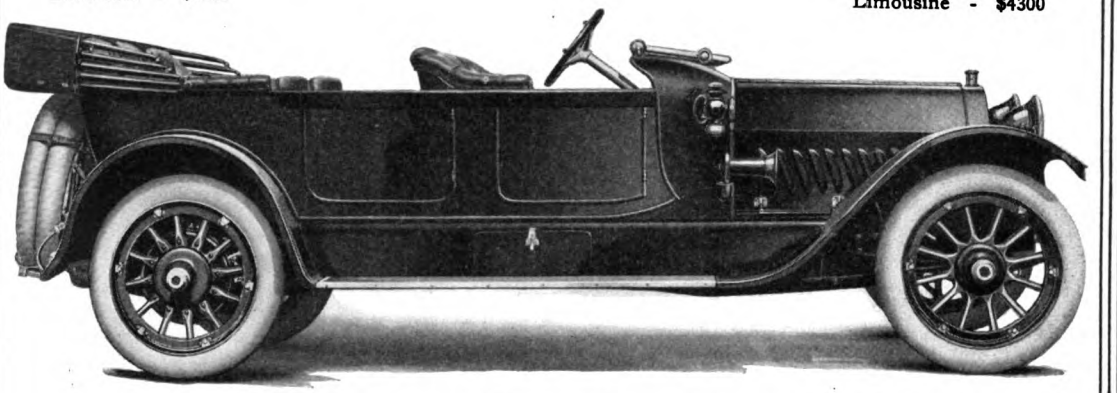
Seven Passenger Touring Body, $175 extra.
Limousine - $4300

Oldsmobile 1914

Four or Five Combination, Phaeton, Touring Body Type,

$2975

Seven Passenger Touring Body, $175 extra.
Limousine - $4300



Seven Passenger Touring Car, Model 54

Lower in price, and even higher in quality, than any of its predecessors—the Model 54—1914 Oldsmobile—is creating more concrete evidence of live dealers' interest than any other high grade six on the market.

THE PRICE

$2,975 practically eliminates competition with dealers handling cars priced from $4,000 to $5,000—for the Oldsmobile is as good as any of these. The lines of this car are of distinctive Oldsmobile design—a standard which has led all competition, whatever the price.

WE ARE SIX CYLINDER PIONEERS

Oldsmobile pioneered the six-cylinder motor, and it is unnecessary to dwell on the value of the years of ripe experience in the manufacture of six-cylinder cars—which is back of the Model 54. The Oldsmobile unit power plant 3-point suspension (bore 4¼, stroke 5¼), is a wonderful piece of machinery.

MATTERS OF COMFORT, UTILITY AND REFINEMENT

We learned how to build comfort into the Oldsmobile in the early days of the industry. If we knew of any better equipment or little matters of refinement than are on the Model 54 we would be the first to install them; but we have put everything into this car that spells utility, comfort and refinement.

Here are a few of the equipment details: The very latest and improved Delco system of self-starting, lighting and ignition. Noil motor driven tire pump. Combination electric and oil side and tail lamps, special Oldsmobile design. Special design Oldsmobile electric head lamps. Special design three-way adjustable ventilating windshield. Top, boot, and patented adjustable side curtains—60 miles speedometer. Adjustable stem setting and winding Waltham clock. Rear tire irons, capacity for two tires. Demountable rims, one extra. Imported horsehair tonneau mat. Electric light in tonneau. Extension electric trouble lamp.

PROMPT DELIVERIES

Never in the history of this Company have we been so well prepared to take care of our dealers by prompt shipment of cars as ordered. We began the delivery of our new models August first, and each day sees the regular quota of cars coming through the factory, tested and inspected down to the minutest detail, on schedule time. You can absolutely count on all delivery promises being adhered to rigorously.

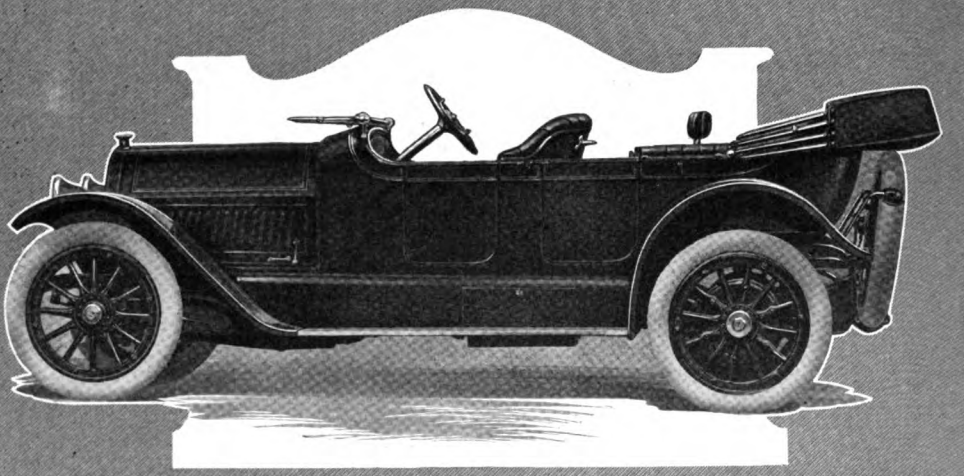
WRITE US AT ONCE

In a short while, orders for all cars available for the coming season will be closed, and we shall be unable to go beyond this point. We urge, therefore, that if you wish to sell a car that measures up to the highest standards of quality, workmanship and design, you write us at once, letting us know your prospects, size of territory desired, and your facilities for properly representing the Oldsmobile line.

OLDS MOTOR WORKS, LANSING, MICHIGAN

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New Series H Speedwell Six Ready for Delivery



This new car recognizes no direct competition when mechanical excellence, distinguished appearance and real value for the money are considered.

Dealer contracts for the new Series H Speedwell Six are now being made—it will pay dealers who are in a position to handle a high grade car to get in touch with us.

Something New
Something Better
Something Different
Jan. First

It Will Pay You to Investigate Now

Factory co-operation and selling helps are assured all Speedwell dealers. Our special plan greatly enhances the Speedwell dealer proposition—write for it.

The new series H Speedwell Six has all the merits of design of Speedwell models preceeding together with many additional accessories and refinements in detail.

THE SPEEDWELL MOTOR CAR CO., Dayton, Ohio

Address Dept. W

Five Passenger, Fully Equipped Touring Car $2850

Seven Passenger Model $2950

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Another World's Record
FOR THE
BOSCH
Magneto

1078 MILES IN 12 HOURS

An average of 90 miles an hour for 12 hours running

A SIX-CYLINDER SUNBEAM on Brooklands, England, has made a new and remarkable record for sustained speed. The speed was made possible by using the Bosch Magneto—*of course.*

It is obvious, that when a car is Bosch-Equip, it has an exclusive and forceful selling feature that makes easy selling possible. Bosch records of speed and reliability are selling factors of consequence.

Have the cars you sell Bosch-Equipt

BOSCH MAGNETO COMPANY
224 West 46th Street, New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

Service Stations in All Important Centers

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Those who are within the world of Cadillac ownership are enjoying luxuries to which you must remain a stranger so long as you are outside that world

Motoring as you know it, and motoring as the owner of a 1914 Cadillac knows it, are two distinct and different things.

The new Cadillac neither rides nor drives like any other motor car.

It is not that the two speed direct drive axle has changed the principle of the Cadillac engine.

But it has conferred upon it, powers which it did not possess without it.

It has altered the performance—changed the character of that performance—and changed the sensations resulting from that performance.

So, those who are within the world of Cadillac ownership, are enjoying luxuries to which you must remain a stranger so long as you are outside that world.

And they are marked, these differences—these peculiar luxuries of the Cadillac.

So marked, that we doubt if you can drive the memory of them out of your mind after a single ride in the Cadillac.

They are not easy to describe—though you will be conscious of them before the car has travelled half a mile.

But, let us see if we can give you an idea.

You know what the Cadillac—and the Cadillac engine—were before the advent of this 1914 car.

You know that it was notably free from tremor.

You know that it did not lunge forward, but forged forward, majestically, like a battleship.

These were the natural fruits of Cadillac construction—refined and developed to an extraordinary degree.

And now, new qualities and new functions have been conferred upon it, by means of a second—supplemental—principle.

This other principle—the two speed direct drive axle—takes the Cadillac at its high point of development and extends it.

Eliminating all technicalities from the subject, the advantage of the high direct drive gear ratio consists in the fact that through it, a given speed of the engine produces an increase of 42 per cent in the speed of the car.

Out of this central improvement grow those differences in operation to which we have referred.

Keeping in mind the more slowly moving engine, ***you sense at once that infinitely greater steadiness must follow.***

Holding fast to the same mental picture, ***you see that vibration must be reduced almost to the vanishing point.***

Imagine the car with the low direct gear, operating at an engine speed of 700 revolutions per minute.

The car will travel 21 miles per hour.

Shift the electric switch and pass into the high direct drive gear ratio, and the speed of the car increases to 30 miles an hour ***with no increase in the speed of the engine.***

Unconsciously, when you change gears, you look forward to the apparent effort and labor of the engine to be increased.

It does not come.

The trembling does not come.

No shock, no disturbance is communicated to the car or its occupants.

The steady pressing forward of the car is uninterrupted—the smoothness is continuous.

Yor forget the engine, you forget the car. There is only quiet—and a soft swinging through space.

Is it any wonder that Cadillac owners are volubly enthusiastic?

They have this velvety mode of travel of which you have yet to learn.

They have attained it by methods which lower the fuel consumption, decrease friction and reduce appreciably the cost of operation.

They have artistic body designs which make it difficult to suggest any sense in which their beauty could be heightened.

They have progressive, scientific engineering development.

They have the certainty of the Cadillac Delco system of electrical cranking, lighting and ignition.

They have the improved Cadillac carburetor, hot water jacketed and electrically heated.

They have entrance and exit for front seat passengers on either side,—right hand drive and right hand control with all of its advantages and no disadvantages.

They have the simple electric switch for shifting from high direct to low direct gear, or vice versa.

They have Cadillac standardization, true alignment and interchangeability of parts.

They have the product of an organization inspired by the highest ideals.

They have the Cadillac glorified and refined.

They have a car entitled to the distinction, "Standard of the World."

STYLES AND PRICES

Standard Touring Car, five passenger..... $1975.00

Seven passenger car.....	$2075.00	Landaulet Coupe, three passenger....	$2500.00
Phaeton, four passenger.....	1975.00	Inside drive Limousine, five passenger	2800.00
Roadster, two passenger.....	1975.00	Standard Limousine, seven passenger	3250.00

All prices are F. O. B. Detroit, including top, windshield, demountable rims and full equipment.

Cadillac Motor Car Co. Detroit, Mich.

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Made to fit any engine-any thread

ACCEPT NO SUBSTITUTE

Insist Upon The

RED TAG



IT GUARANTEES

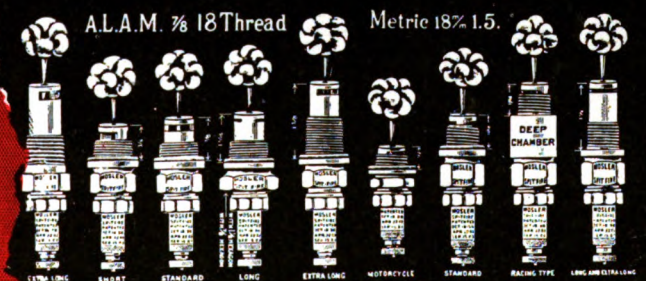
PACKED IN THIS BOX & TAGGED FOR YOUR PROTECTION

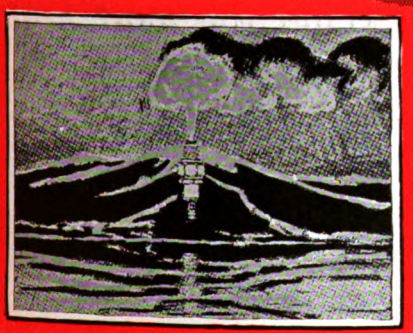
Genuine Platinum Point Guaranteed Forever

Mosler Vesuvius Plug

Energetic Ignition

Greater Power





Absolutely Gas Tight
Has No Equal
For Speed and Power
Can Be Taken Apart Easily
And Reassembled Absolutely Gas Tight
The Stone-Insulated Plug Par Excellence
Will Outlast Your Motor

SOLD BY THE LEADING DEALERS

LIKED BY EVERYBODY

A. R. MOSLER & CO.,

P.O. BOX "M"

MT. VERNON, N.Y.

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For Automobiles



INVADER OIL

OILS differ in respect to their body or thickness---their ability to resist heat---their ability to resist cold---the amount of carbon they contain.

¶ The differences can all be measured and expressed in figures.

¶ ***Gasoline motors*** differ in minor mechanical details, but they are all alike in that they generate a higher temperature than any oil can withstand and they all require an oil to burn up cleanly.

¶ In other words, all gasoline motors require an oil which will stand the ***most heat*** before burning and deposit the ***least carbon*** after burning.

Territorial agents are in a posi... same prices as the main office

PHILADELPHIA.....Invader Oil Co., 113 Arch Street
BOSTON.....Invader Oil Co., 284 Columbus Avenue
WASHINGTON.....Invader Oil Co., 512 Kenois Building
PORTLAND, ME.....James Bailey Co.
DETROIT, MICH.....Boyer Campbell Co.
CHICAGO, ILL.....Motor Car Supply Co.

INVADE...
Lessees of Ch...

Main Office, 81 Broad Street, New Y...

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THE oil which is best suited to your motor, therefore---and to every other gasoline motor on earth, from the old one-lunger to the six-cylinder, nickelplated 1914 variety---is the oil which will stand the most heat and deposit the least carbon. All the talk, ink, figures, tables, schedules, money and salesmen on earth cannot get one inch away from the fact.

¶ If, then, the tests of Invader Oil show that it ***will*** stand more heat and deposit less carbon than any other oil, may we ask, in the name of common sense, isn't it---mustn't it---be the best oil for you to use on ***your*** motor?

For Automobiles



INVADER OIL

to fill orders as promptly and at the any branch of the Invader Oil Co.

OIL COMPANY

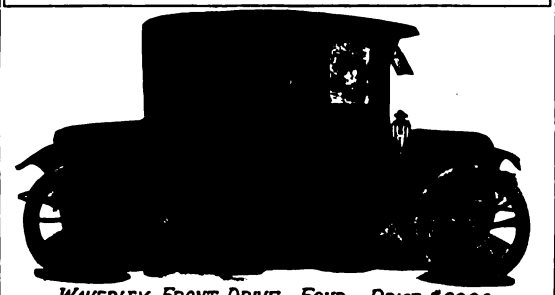
F. Kellom & Co.

New York City Branch, 1906 Broadway

ST. LOUIS, MO	Beck & Corbitt Iron Co.
KANSAS CITY, MO	Amer. Lubricating & Supply Co.
SALINA, KANS	Lee Hardware Co.
LOS ANGELES, CAL	W. D. Newerf Rubber Co.
SAN FRANCISCO, CAL	W. D. Newerf Rubber Co.
TACOMA, WASH	Union Motor Car Co.

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THE Waverley SILENT Electric



WAVERLEY FRONT-DRIVE-FOUR PRICE $2900



INTERIOR FRONT-DRIVE-FOUR



INTERIOR REAR-DRIVE-FOUR PRICE $2800



INTERIOR-FRONT & REAR-DRIVE BROUGHAM PRICE $3000

FASTIDIOUS REQUIREMENTS MET IN THE 1914 WAVERLEY

THE reasonable requirements of your fastidious customer will be found—where else, if not in a Silent Waverley.

WAVERLEY FRONT-DRIVE-FOUR—The classic lines, the approved dignity, the comfortable seating arrangement, the luxurious furnishing, the unrivalled spring suspension of the Waverley Front-Drive-Four—these are reasonable requirements, and yet where else will you find them all combined except in the Silent Waverley?

Take note of a single detail. The driver's seat revolves, permitting its occupant to leave or enter the car by the left hand door without disturbing the other passengers—significant of the care with which the fastidious customer's taste has been consulted in the 1914 Waverley.

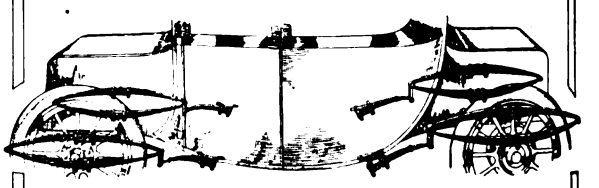
WAVERLEY REAR-DRIVE-FOUR—Has your customer a preference for the sociable rear seat drive—a natural preference to which he has a perfect right? Where else will he find so wide a choice in seating arrangement? The Silent Waverley Rear-Drive-Four offers two—the usual arrangement of two double seats placed vis-a-vis, and the different plan shown in the illustration—a double rear seat with two revolving chairs in the right and left front corners.

WAVERLEY FOUR-CHAIR-BROUGHAM—These are both very practical and deservedly popular seat plans; but there is still another, that of the Silent Waverley Four-Chair-Brougham, the sociable car supreme, where the usual rear seat is divided into three separate, luxuriously upholstered chairs, the middle one placed slightly behind the other two for the sake of extra seat space (61 instead of 52 inches). The driver occupies the left hand chair with no one sitting in front of him and the fourth passenger has a folding chair in the forward right hand corner. This is the Waverley designer's happy arrangement to meet the very particular requirements of your *MOST* fastidious customers. Where else will you find its equal?

WAVERLEY BROUGHAM FRONT AND REAR DRIVE—Or again is your customer in doubt, as he has a right to be? The Silent Waverley Front and Rear Drive Brougham will give him the dual control preferred by some—the privilege, that is to say, of driving from either front or rear seat.

WAVERLEY LIMOUSINE-FIVE—For the customer who requires a larger car there is the Silent Waverley Limousine-Five, the electric de luxe, where the driver has not only a separate seat with full view ahead, but even a separate door for his special use.

The Silent Waverley Electric is so far from being a "standardized car" that every special need of the most fastidious purchaser will be found in one of its several different models.



SPRING SUSPENSION

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THE Waverley SILENT Electric

SEVENTEEN YEARS OF LEADERSHIP

BEHIND the name, the Silent Waverley, is an interesting story—a story of leadership in every department of coach design and electric engineering.

WAVERLEY—THE PIONEER ELECTRIC

The electric exhibited at the first American show
The first electric with direct geared drive
The first electric with successful shaft drive
The first electric coupe
The first electric limousine
The first electric with full view ahead
The only electric with four separate chairs
The only electric with low center of gravity
The only electric with low entrance
The only electric with long wheelbase
The only electric with no battery under seats or floor

The Silent Waverley has been not only the pioneer electric in every forward movement—it has seen many of its features first condemned then imitated in practice.

WAVERLEY HERRINGBONE GEARS—From the first the Silent Waverley Electric has been equipped with Herringbone gears while many experiments have been made with chain drives, bevel gear shaft drives and worm gears.

Nevertheless, the highest authorities among gear experts have continued to maintain that for strength, quiet running qualities and high percentage of efficiency, the Herringbone gear is the best of all gears.

Efficiency tables put out by leading parts manufacturers of bevel and worm gear drives show the lower the horsepower the lower the efficiency, and compared with the gas car the electric is always a machine of extremely low horsepower. The efficiency of Herringbone gears shown by test in Silent Waverley Electrics is 98.7 per cent., the same as in a 40 or 4000 horsepower transmission.

Waverley gears have been right from the start while experimenters have been shifting from one form of drive to another.

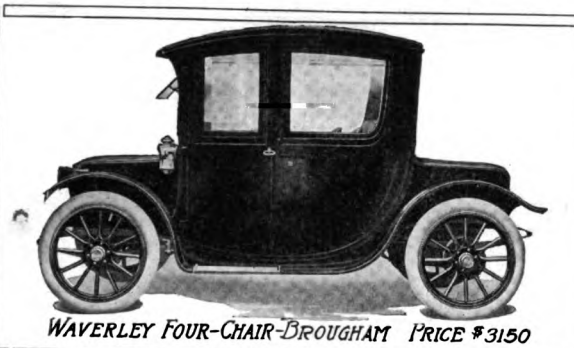
WAVERLEY, FULL ELLIPTIC SPRINGS—In its spring suspension as well as in its power transmission the Silent Waverley leads all other electrics. Full elliptic springs with torsional supporting side springs, as applied in the Waverley, insure greater riding ease than will be found in any motor vehicle, choice of solid, cushion or pneumatic tires.

If you, Mr. Dealer, are thinking of adding an electric to your present line of gas cars you will make no mistake if you investigate first and foremost the Silent Waverley Electric. We are not cutting our commission to dealers.

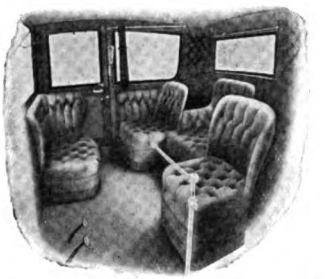
THE WAVERLEY COMPANY
100 South East St., Indianapolis, Ind.

Chicago Branch
2425 Michigan Ave.

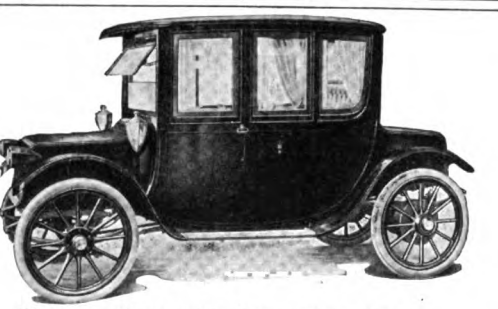
New York Office
1922 Broadway



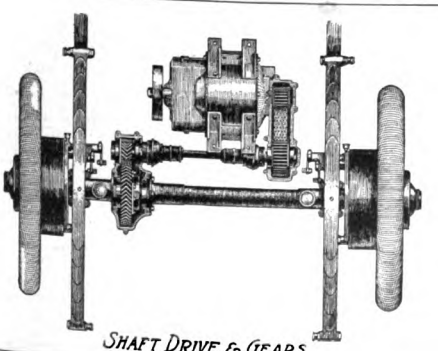
WAVERLEY FOUR-CHAIR-BROUGHAM PRICE $3150



INTERIOR FOUR-CHAIR-BROUGHAM



WAVERLEY LIMOUSINE-FIVE PRICE $3500



SHAFT DRIVE & GEARS



INTERIOR LIMOUSINE-FIVE

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street NEW YORK CITY



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 408 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

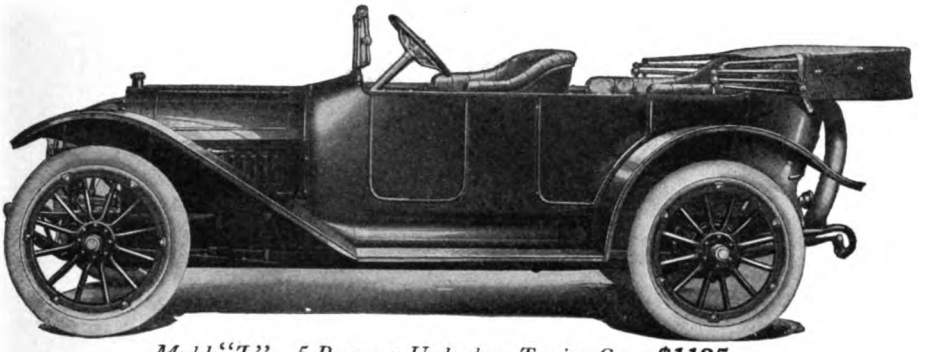
J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co. (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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Rushmore Electric Lighter and Starter

Regal

Left Hand Drive—Center Control



*Model "T"—5 Passenger Underslung Touring Car—**$1125***

Scientific Care of Every Detail— Secret of *Regal Quality*

THE New Series of Regal Cars has increased our reputation as builders of automobiles of quality. This fact is now recognized by dealers and consumers the world over.

And the secret of Regal Quality is—*scientific and conscientious care in the construction of every single detail.* Thus, perfect details result in pefect Regal Cars—automobiles of utmost efficiency, long-life, power, beauty and economy.

The new Regal Cars are *finished products*—complete in every detail of mechanical construction and body beauty. They actually *look like* cars costing $2000 or more because of their refinement features and external appearance.

Every desirable advancement is found in these new cars. No more motor car value can be purchased anywhere this year for such prices.

Values Offered You—

We have incorporated the efficient and positive Rushmore Electric Starter and Lighter as standard equipment on all Regal Cars. The desired left hand drive and center control have been adopted. Other features of our standard equipment are: Electric headlights, with dimming attachment. Long, low, sweeping body lines with cowl dash. Starter, lighting and speedometer switches on instrument board. Special adjustable curtains. Rain vision and ventilating windshield. Demountable rims. Tire irons. Foot throttle and muffler cut out.

The New Series—

Our New Series includes Model "T", a large and beautiful 5-Passenger, underslung, touring Car at $1125—Model "N," an efficient, speedy, underslung roadster, $1125—Model "NC," an elegantly finished and appointed, underslung coupe selling at $1600 and Model "C," a big, powerful, 5-passenger overhung car for $1350. The underslung values of extreme safety, economy and beauty are developed to the highest point in our Underslung Models.

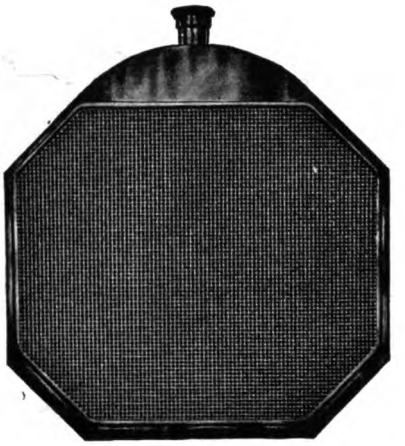
Dealers—Write Today

We desire wide-awake, aggressive dealers in certain territory still open. You may be just the right man. We give our dealers excellent co-operation and unusual factory service. Write or wire us for our New Series Literature, *with complete specifications and prices*, and our attractive dealers' proposition.

Literature sent to prospective purchasers on request.

Regal Motor Car Co. 263 Piquette Avenue, Detroit

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OUR departments of engineering and design co-operate with the men who build the car—combining their weight of experience in radiator making with the particular requirements of the designer of the automobile.

We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

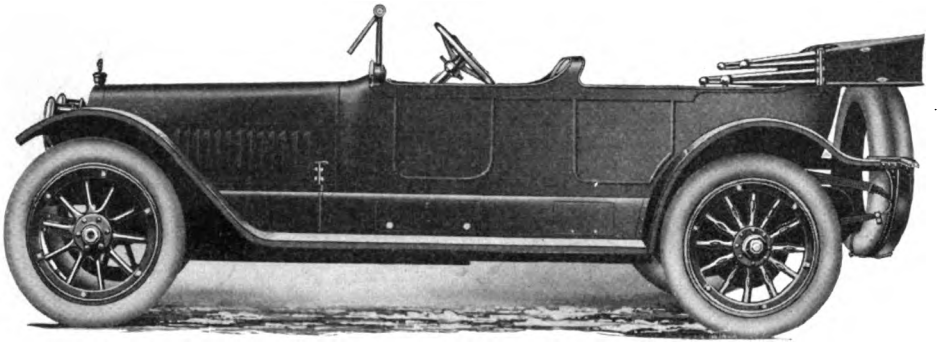
Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky inefficient radiator and a "superheated" customer, then be sure this car was *not* equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

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Two New Stearns-Knight Models—Distinctive in Design and Construction



Stearns-Knight Six-Cylinder Six-Passenger Touring Car

FEATURES of body design never before seen in any American car distinguish the new Stearns-Knight four- and six-passenger touring cars. The upholstery and trimming are radically different from the ordinary type, without losing any of the comfort and luxury for which Stearns-Knight cars are famed. Smooth, dull leather, crossed by leather bands with buttons at intersections—the seats flanked by rounded arm rests—produce an unusual effect of roominess and comfort.

The auxiliary seats of the six-passenger type combine an equally unusual design with increased facility in handling. Practically invisible when not in use, a slight pull upward places them in position—the work of a moment only.

Other features of these new cars—the cowl-back of the front seats—the absence of upholstery above the edges of the body—the "one-man" quickly-operated top and convenient curtains—and many other details, combine to make these cars exceptional in appearance and in utility. Combined with the wonderfully efficient Stearns-Knight motor and chassis, they represent the best of all that is new in motor car design.

Four-Passenger Light Touring Car { **Four Cylinder—$3750** / **Six Cylinder—$4850**

Six-Passenger Touring Car . . { **Four Cylinder—$3900** / **Six Cylinder—$5000**

Catalog upon request

THE F. B. STEARNS COMPANY

Cleveland, Ohio

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DEFENSE or TRIBUTE

The Cost of Each





The price of the Ellis Gasolene Purifier is $3.50, prepaid to anywhere in the United States.

Measure the outside diameter of fuel feed pipe and give dimension with order.

To install, cut section same length as Purifier from fuel feed pipe, thread ends of pipe and screw Purifier on.

Once in use, drain the Purifier once a week or so by turning thumb screw on under side of Purifier. This is all there is to the only defense there is against carburetor trouble.

This is all there is to the only defense there is against carburetor trouble.

Carburetor trouble levies its tribute on every motorist. They have to pay this tribute constantly, and in the lifetime of a car it bulks up in an alarming manner. Not alone in money, but in time and worry does so-called carburetor trouble exact its tribute. It affects a car's efficiency, maintenance, as well as the owner's enjoyment in a score of other ways.

The manufacturer and dealer feels some of the burden of this exaction. The carburetor is always a weak point in an otherwise perfect car. Its tribute is a good deal like blackmail, this so-called carburetor trouble. All pay tribute for relief, but it is only temporary. Is there no remedy—a permanent, lasting remedy for "carburetor trouble"? There is, if you go about it right. ***Carburetor trouble is a misnomer. It is the fuel's fault.*** Impurities in commercial gasolene cause the trouble. They overshadow any carburetor's ability to perform its work. Fix the fuel and stop paying tribute.

The Ellis Gasolene Purifier

is a patented device consisting of a series of screens and filters which, when tapped onto the fuel feed pipe, intercept every particle of dirt or sediment commonly found in gasolene. It also traps and disposes of any and all water which invariably accumulates in a carburetor.

The greatest benefit of an Ellis Gasolene Purifier is that in filtering all impurities from gasolene, it allows the carburetor to do its work free and unhampered by impurities in fuel which it is incapable of handling. The cause of 90% of carburetor trouble lies in the fuel. The Ellis removes the cause of "carburetor trouble" and effectively defends its users against manifold troubles, worries and expenses.

Price of Defense Against Carburetor Trouble $3.50

Write your distributor or write us direct for full particulars

THE NATIONAL SALES COMPANY

Sole Manufacturers

45 Milk Street **Boston, Mass.**

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Hupmobile

TWO or three weeks ago Hupmobile dealers from all parts of America and Europe as well came together in convention at the factory to see this new car.

And one man swept the convention by saying what everyone else had thought but had not said.

For ten minutes he had been telling of the hold of the Hupmobile on his big Western territory; and the crowd went wild when he suddenly drawled, by way of climax:—

"Boys—when yuh talk to me about competition — I — don't — know—what—yuh—mean. I never met up with it!"

And do you know, my dear sir—you who are thinking of buying a car—that this dealer merely expressed a condition that exists everywhere?

Stop and think—have you ever heard any but kind words of the Hupmobile?

Isn't it always spoken of separately—by itself?

Isn't it always singled out, and not grouped, as other cars are grouped together in a low priced class?

And do you know why?

Why This 1914 Car Is Unique and Alone

The Hupmobile is in a class by itself because it has a sturdy pressed steel frame.

The Hupmobile is in a class by itself because it has a pressed steel Pullman body.

The Hupmobile is in a class by itself because it is the biggest user of aluminum of any moderate priced car.

The Hupmobile is in a class by itself because it is the biggest user of high priced steel of any moderate priced car.

The Hupmobile is in a class by itself because it has a powerful long-stroke motor, 3¼ in. x 5½ in.

The Hupmobile is in a class by itself because it has an individual, distinctive design.

The Hupmobile is in a class by itself, in other words, because by its careful and exhaustive attention to the most intimate details of construction—and by its use throughout of the finest materials obtainable, no matter what the cost, it has justified our belief that it is the best car of its class in the world.

Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit

"32" Touring Car or Roadster—$1050 f. o. b. Detroit

In Canada, $1250 f. o. b. Windsor

SPECIFICATIONS

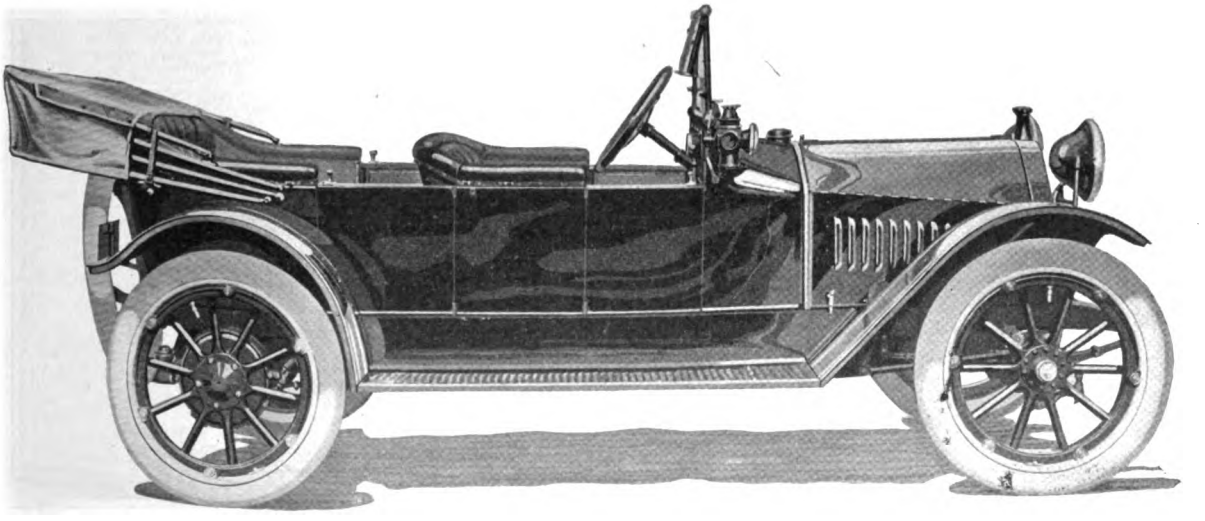
Four-cylinder long-stroke motor. 3¼ x 5½ inches; unit power plant. Selective type transmission, sliding gears. Center control. Full floating rear axle. 106 inch wheel base. Tires, 32 x 3½ Q. D. Rear shock absorber. Magneto cover.

EQUIPMENT

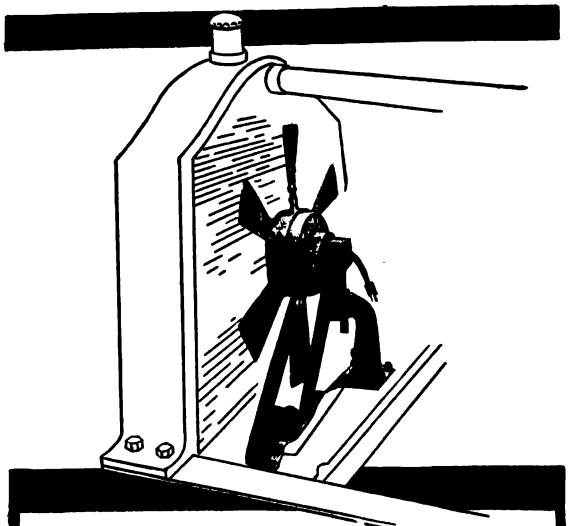
Electric horn; rain vision ventilating windshield; mohair top with envelope; Hupmobile Jiffy curtains; speedometer; cocoa mat in tonneau; Prest-O-Lite; oil lamps; tools. Trimmings, black and nickel.

"32" Touring Car or Two-passenger Roadster with Westinghouse two-unit electric generator and starter; electric lights; oversize tires, 33 x 4; demountable rims, extra rim and tire carrier at rear—$1200 f. o. b. Detroit.

In Canada, $1380 f. o. b. Windsor.



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Kemco Fan Type Generator

SOLVES the problem of equipping used cars with generators at moderate cost to charge storage batteries, operate starting motors and electric gear shifts and electric lights. Attaches to fan bracket. Operated by fan belt.

Serves as Both Genorator and Fan

Weighs only four pounds more than regular fan. Requires but little additional power. Water-proof and dust-proof. Costs less than other good generators.

We Need Representatives

Hundreds of customers all over the country want KEMCO generators installed. We need men to do this work and act as our agents. If you want to make some easy money write for our proposition. Fill out coupon and mail today.

The Kemco Electric Manufacturing Co.
CLEVELAND, OHIO

The Kemco Electric Mfg. Company
CLEVELAND, OHIO

Gentlemen:—Please send me full information regarding your Kemco Fan Type generator, together with agent's proposition.

Name .....

Street .....

City ..... *State* .....

My business is .....

M. W.

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Packard, Peerless, Winton, Stevens-Duryea, Lozier, Stearns, Palmer-Singer, Havers, Franklin, Chalmers

and the makers of many other high grade cars use and highly endorse the

Four Cylinder KELLOGG Tire Pump

Because the makers of these cars have used the Kellogg for four years and found it to give consistent and satisfactory service;

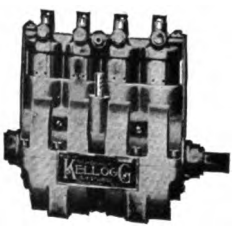
Because they have found the Kellogg the only power air pump good enough to become a part of their equipment;

Because the Kellogg's four cylinders do not strain the motor or gears;

Because the Kellogg is quick in action, reliable at all times, and never permits oil to enter tires;

Because the Kellogg is the best power air pump ever placed on the market.

Manufacturers, Dealers, Car Owners



Attachments are supplied for installing the Kellogg in practically any model of any car now in use or announced for 1914.

Write for our book—"Air On Tap." Learn what the Kellogg will do for you—how it will make money for you.

Kellogg Manufacturing Company

Main and Circle Sts., Rochester, N. Y.

NEW YORK 1744 Broadway
SAN FRANCISCO 444 Market St.
CHICAGO 1112 So. Michigan Ave.



Kelly - Springfield

Automobile Tires

You hear a lot of free conversation about tires these days, which makes it all the more refreshing to be able to count on such a definite proposition as this. Real rubber plus handmaking plus 17 years experience equals Kelly-Springfield Tires.

Kelly-Springfield Tire Company

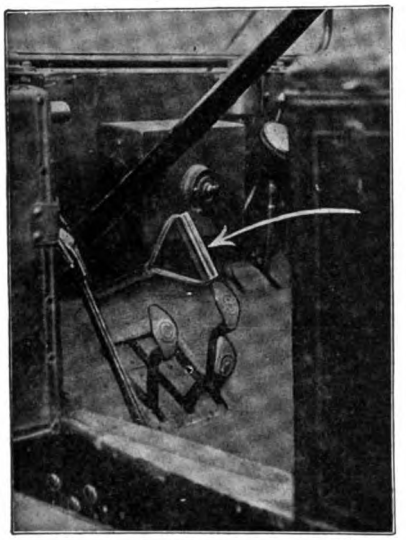
Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Boss Rubber Co., Denver, Colo.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Central Rubber & Supply Co., Indianapolis, Ind.
H. R. Olmstead & Son, Syracuse, N. Y.
Bering Tire & Rubber Co., Houston, Texas.
Todd Rubber Co., New Haven, Conn.
Atkinson Tire & Supply Co., Jacksonville, Fla.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

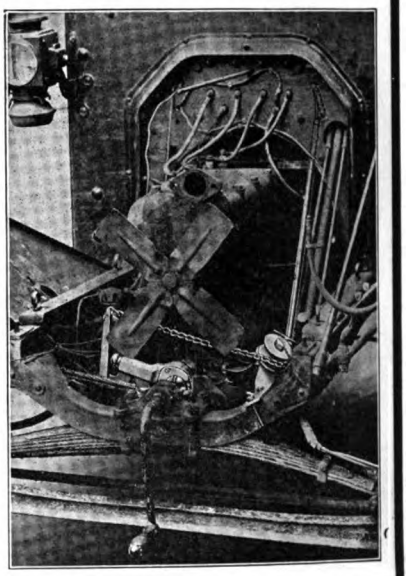
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.

1421 Michigan Ave., Chicago, Ill.

Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday—$2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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The pinion on the armature shaft engages the flywheel gear when the switch button is pressed, turns it, and slips automatically and silently out of mesh the instant the engine starts.

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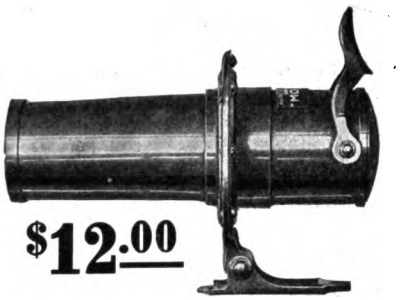
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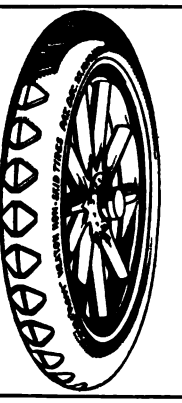
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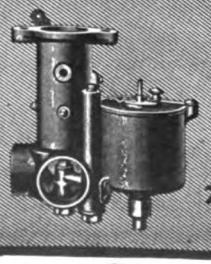
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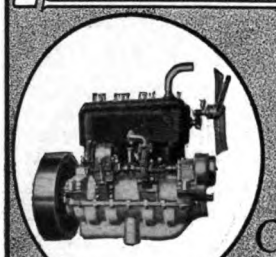
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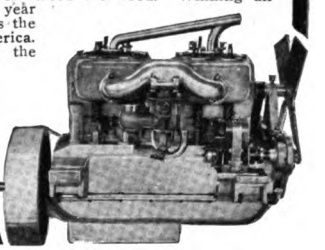
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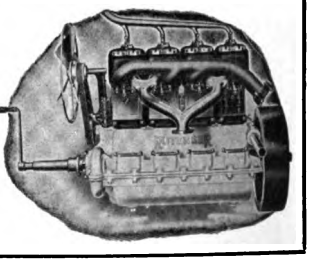
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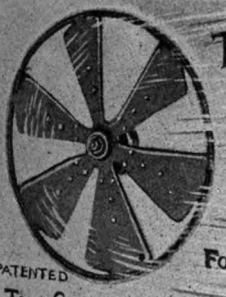
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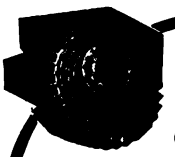
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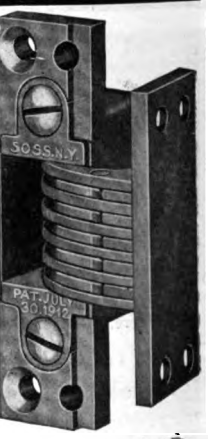
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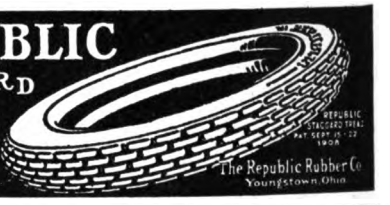
We Sell! You Deliver!

That's how many dealers are cashing in on the Taylor "Noil" Tire Pump, built with plunger and diaphragm. Saves labor—adds to tire life—an investment motorists cannot resist. All inquiries referred to dealers. Write for liberal dealer's offer TODAY. Please name cars handled.

TAYLOR MFG. CO., P. O. Box 485, A. B., Chicago, Illinois

REPUBLIC STAGGARD TREAD

The Tire Perfect!



The Republic Rubber Co Youngstown, Ohio

AJAX

MILEAGE CONTEST $5,000 IN CASH PRIZES

For Full Particulars Address

AJAX-GRIEB RUBBER COMPANY, 1796 BROADWAY NEW YORK

Reo the Fifth

Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,175.

R. M. OWEN & CO., General Sales Agents.

REO MOTOR COMPANY, - - Lansing, Mich.

The Otho SYSTEM for Self Starting Lighting Ignition Signalling

Is right Inside the Flywheel

Otho Motor Co., 60 State St, Boston, Mass.

SIMMS MAGNETO

"American Made"

NOW READY FOR THE TRADE

Highest Efficiency—Good Service Guaranteed

THE SIMMS MAGNETO COMPANY, 1790 Broadway, N. Y. City Factory, Bloomfield, N. J.

PENNSYLVANIA Oilproof VACUUM CUP TIRES

Making Their Mark Everywhere

Pennsylvania Rubber Company

Jeannette, Penn.



MOTOR WORLD

"The Paper That Is Read, Not Merely Looked At"

It ought to be a regular weekly visitor in your office, Mr. Dealer. $2.00 per year—a small price for a big value. Subscribe today.

Motor World Publishing Co., 1600 Broadway, New York

Every Stutz Car

is exceedingly easy-riding and comfortable. The straight line low slung body, deep upholstery and luxurious appointments of the Sturdy STUTZ give it that aristocratic design which lends dignity and quality to a high class motor car. Write today for advance booklet A-15 Sturdy STUTZ Announcement.

STUTZ MOTOR CAR COMPANY, Indianapolis, Ind.

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Shaler Vulcanizers will not be included in any 1914 car's equipment

Look over your stock. How many accessories of real utility do you see which are not furnished in some form with the car?

The Shaler Line of vulcanizers for motorists and garages remains the one standard line of accessories on which the car manufacturer does not compete with the accessory dealer.

A reliable vulcanizer is a necessary part of EVERY motorist's equipment. Tire trouble is the motorist's weak point. It's easy to sell him something that will eliminate it.

Most motorists are familiar with Shaler Vulcanizers in a general way because they have read our advertisements. When they came in and complain about tire troubles, it's up to you to suggest a Shaler as a sure remedy. Sell vulcanizers to them with the understanding that it's a "make-good-or-money-back" proposition.

There are Shaler Vulcanizers for every possible requirement of motorist and garage, from the $2 Vul-Kit for mending a tube puncture now and then, to a complete garage plant.

C. A. SHALER CO.

442 Fourth Street **Waupun, Wis.**

SHALER VULCANIZER

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

YOUNG Spaniard, age 23, speaks and corresponds fluently Spanish, German, French, good knowledge English, 6 months with present employers, exporters in New York, wishes position with manufacturers where his services could be utilized in attending to foreign correspondence, etc. Location no object. Salary to start, $20.00. Address "FOREIGN," care Motor World.

STEVENS-DURYEA 1910 Model "X" touring car, fully equipped, excellent condition. Sacrifice $550. FRANKLIN, 172 Pacific St., Brooklyn,.

PEERLESS LINING DYE.
Makes a uniform black lining of all faded and stained linings of tops and curtains. A fast black color that will not fade or wash off. THE COLUMBUS VARNISH CO., Columbus, Ohio.

WANTED — A second-hand Duryea "Electa" or "Buggyaut." Give full details and lowest price. OLIVER A. COBER, Hespeler, Ont., Can.

DISSOLUTION OF PARTNERSHIP.
We must sell at once two "Little Giant" 1-ton trucks, made by the Chicago Pneumatic Tool Co. One used as a demonstration and the other brand new. Cost $1,275 each; make your offer quick. C. S., 157 East 121st St., New York.

SALES MANAGER of motor truck manufacturing company desires to make a change. Address J. B. H., care Motor World.

FOR SALE OR TRADE—National roadster, fully equipped, in A1 condition. A. F. SCHRUP, Dubuque, Iowa.

MACK SIGHT-SEEING CAR
15-passenger, leather upholstered, fine condition, 50 H.P. Mack motor, solid tires, seats removable, canvas top and side curtains; money maker; must sacrifice. Address P. E. CO., 500 5th Ave., New York.

PEERLESS MOHAIR TOP DRESSING.
Makes old, faded, water and grease stained tops look like new. Waterproofs leaking mohair, duck and canvas. Leaves the cloth soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—One of the largest, best known, best equipped and most prosperous garages in the East; located on the New Jersey coast; firmly established with a profitable local trade and a handsome and constantly increasing transient trade; includes sales agency and paying accessory department. Owner is not trying to unload a "lemon" but has earned enough from the business to desire to retire and "take things easy." Would be willing to leave $15,000 or $20,000 in the business and take stock for it but would not continue as active partner. Rare and real opportunity for wideawake man. PROSPERITY, care of Motor World.

ACCOUNT of going to Europe, lady will sell seven-passenger 48-horsepower 1912 Packard, in perfect order, for delivery November 1. Price, $2,000. BOX 623, Litchfield, Conn.

THE only successful aluminum solder will solder aluminum, silver, nickel, brass, pewter; guaranteed. Box with instruction, 50c., stamps or money order. No free samples. ALUMINUM CO., 2714 Olive St., St. Louis, Mo.

PEERLESS CUSHION DRESSING.
Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—Machine shop and garage; will invoice about $3,000; no opposition; a money maker. The Ford agency can be had for the county. CITY GARAGE AND MACHINE SHOP, Buffalo, Okla.

KEROSENE FOR AUTOMOBILES.
Our new Model B uses successfully half and half mixture lowest grades kerosene and gasoline. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special Agents' prices. Dept. 9. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World.. Six words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county or city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebakers, Overlands, etc.
MOTOR LIST CO. OF AMERICA
230 News Arcade Des Moines, Iowa

PEERLESS LEATHER TOP DRESSING.
A renewer and preserver of all old leather, rubber and pantasote tops and curtains. A fast black color that will not fade or wash off. THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

WE make Ford racing type bodies in several models, for immediate delivery. AUTO SHEET METAL WORKS, 1530 S. Michigan Ave., Chicago, Ill.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

HOW to time automobile, air ship and motorcycle motors, correct, simple, postpaid 25c. J. C. GEHRING, Ft. Wayne, Ind.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving Street, Rahway, N. J.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

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Woodworth Treads

will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO

The Reasons for Jencick Quality and Jencick Prices are worth knowing.

JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

JENCICK MOTOR CORPORATION, Port Chester, New York

NATIONAL POWER PUMPS - $15

DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.

Manufactured by
NATIONAL MOTOR SUPPLY CO., 5601 Euclid Avenue, Cleveland, Ohio

PERFECTION SPRING COMPANY

Specialists in **Spring Suspension** High Grade Only

CLEVELAND, OHIO

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

Guide Motor Lamps
(ELECTRIC)

Write for "Guide Books" Nos. 1 and 6

GUIDE MOTOR LAMP MFG. COMPANY
CLEVELAND, OHIO (1)

AUTO-TOP FABRICS
OF EVERY DESCRIPTION
Samples and Prices on Request

L. J. MUTTY COMPANY, Boston

METZ "22" ROADSTER $475

The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 25 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.

Schafer Ball Bearings

Famous For Their Durability

BARTHEL & DALY, 42 Broadway, New York

Champion Priming Plugs

Start Motor Car, Motorcycle, Motor Boat or Stationary Motor, in the coldest, rawest days—and do it instantly.

$1.25 each at all dealers, or sent prepaid and guaranteed upon receipt of price.

Don't wait for cold weather; be ready for it.

CHAMPION SPARK PLUG CO.
106 Upton Avenue Toledo, Ohio, U. S. A.

GOODYEAR
AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

ERE-LONG YOU'LL USE

LONG

Cellular—Honeycomb—Spiral Tube Cooling Systems for Pleasure Cars — Trucks — Tractors.

Write to LONG MANUFACTURING COMPANY, Detroit, U. S. A.



UNITED STATES TIRES

ARE GOOD TIRES

We Specialize on

Finishing Crank Shafts

Only

MICHIGAN CRANK SHAFT CO., Lansing



MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
Service Stations in All Principal Cities

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Equipping automobiles with

Vitalized Rubber

Diamond Tires

Squeegee Tread

is selling rubber shod satisfaction

Perfect car control

The motorist who equips his car with Diamond Squeegee Tread Tires enjoys driving at all seasons—he can turn sharp corners and make emergency stops with perfect control of his car and absolute freedom from "forward" or "side" skids.

And this assured safety costs nothing extra, because after the Squeegee Bars are worn from long service, there still remains a strong, thick, tough tread made of More Mileage Vitalized Rubber.

Built for long wear

The discovery of the process that vitalizes rubber so as to strengthen the pure gum with no loss of elasticity—puts into rubber additional mileage that the user gets out in service—has saved Diamond Tire users thousands upon thousands of dollars

All types of Diamond Tires are made of Vitalized Rubber, so why not eliminate possible short mileage and continual "adjustments" by selecting "Diamonds"—the tires that make good for everybody everywhere.

For freedom from skids and increased mileage

Equip with Diamond Tires

BEST FOR AUTOMOBILES, BICYCLES AND MOTORCYCLES

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59 Klaxonized Cars

The old fashioned bulb horn is known to be inadequate. Car buyers demand a more efficient signal. Car makers have had to meet this demand.

There are two ways in which this has been done.

ONE is by supplying an electric "buzzer." This is the lowest type of signal that can be called an "electric horn."

There are many of them on the market that can be bought by car makers for $1.25 to $2. This is even less than the cost of a bulb horn.

Buzzers rarely have a name. If they do, the name plate is usually removed. The signal itself is often placed under the hood — out of sight.

All this is done that you may NOT find out too much about them. If you ask the salesman he usually says it is "like a Klaxon" or as "good as the Klaxon."

The chance is taken that you DO NOT KNOW ABOUT WARNING SIGNALS; that you may not have had sufficient motoring experience to know the difference between the "buzzer" type of electric signal and the Klaxon.

A. E. C.
Alco
Armleder
H. H. Babcock
Benz
Borland Electric
Broc Electric
Buffalo Electric Roadster
Century Electric
Charon (European)
Chicago Electric
Columbia
Croxton
Davis
F. I. A. T.
Havers "Six"
Jeffrey
King
Kissel
Knickerbocker
Knox
Lancia (European)
Lenox
Locomobile
Lozier
Luverne
Marmon
Matheson
Maxwell "Six"
Mercedes
Metallurgique
Mors (European)
Multiplex
National
Nyberg
Oakland
Ohio "Six"
Oldsmobile
Packard
Peerless
Peugeot
Pierce-Arrow
Pope-Hartford "Six"
Pratt
S. & M. "Six"
Schneider (European)
S. G. V.
Simplex
Stafford
Staver
Stearns
Sternberg
Stevens-Duryea
Stoddard-Dayton
Touraine
Walker Electric
Ward
White
Winton

THE OTHER WAY to meet the demand for an adequate signal is by supplying the Klaxon

Fifty-nine car makers already Klaxonize their cars. The list of them is itself the unanswerable indication of the Klaxon's standing. You find in it, every high-grade car made in America.

These makers are paying from four to eight times as much for Klaxons, Klaxonets and Klaxets as they would have to pay for cheap unknown "electric horns."

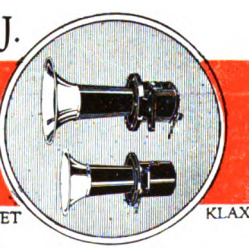
This that you may have the best signal equipment possible to provide—the recognized STANDARD — the signal you KNOW about — that invariably bears the name-plate of its manufacturers — who guarantee its permanently satisfactory performance.



Lovell-McConnell Mfg. Company, Newark, N. J.

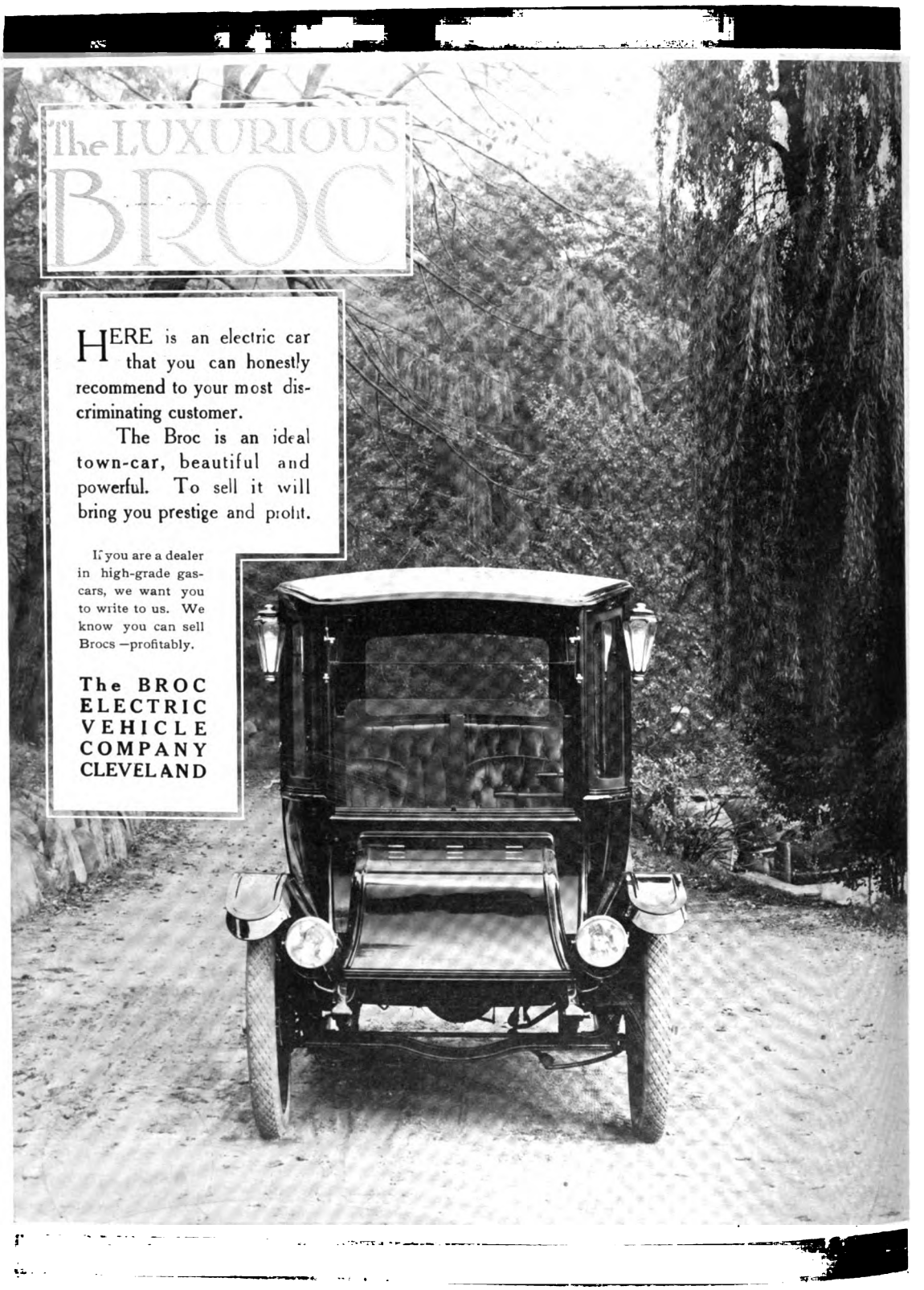
KLAXON

"The Public Safety Signal"



This advertisement planned, written and set up entirely in the Klaxon Factory Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy

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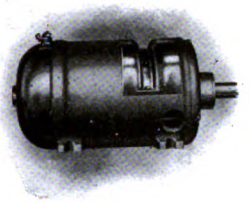
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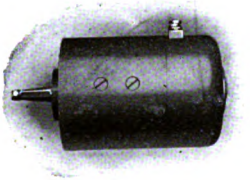
Vol. XXXVII
No. 6

New York, October 30, 1913

Ten cents a copy
Two dollars a year

GRAY & DAVIS
STARTING-LIGHTING SYSTEM





EXPERIENCE

For fourteen years we have produced automobile lamps. Our electric lamps have won international standing. Our entire efforts are devoted to building electrical equipment for automobiles. We are specialists in this field; we do nothing else.

Five years ago we produced the first dynamo which put the electric lighting of automobiles on a successful and practicable basis.

We next studied the application of this same electrical power to the operation of a starting motor and the combination of this motor with our lighting system. *It was a natural progression—not a new problem.*

Here the *experience* of our designing and producing staff assumed vital importance.

For twenty-two years the chief of our Electrical Engineering Department designed direct current generators. Sixty per cent. of all electric automobiles you see today are equipped with motors designed by him.

In adapting our system to different cars, the experience of the head of our Mechanical Engineering Department was of great value. This man spent years in designing and building one of America's leading cars.

The man who superintends the actual production of our automobile equipment has built electric dynamos and motors for fifteen years. Under him hundreds of skilled electricians and machinists work in our plant, which is the largest and most completely equipped factory of its kind.

Before leaving the factory, each Gray & Davis dynamo or motor must meet an efficiency test, an overload test, and a fatigue test to determine whether it is possible to break down the system. These tests are 50 per cent. more drastic than the worst possible road tests.

And afterward—when the system is in actual service on a car, the Gray & Davis Service Department stands back of the motorist. Directing this department is a man who has had twelve years' experience in electrical service work. Under him are sixty-two Service Stations throughout the country. Each one is in charge of a practical electrical expert. One of these stations is within easy reach of every motorist in the United States.

Two years' experience with the Gray & Davis Starting-Lighting System, installed in various makes of cars and operated under every conceivable condition, has proved that it long ago passed the experimental stage and that it successfully meets every starting and lighting requirement.

The Gray & Davis Starting-Lighting System is found on leading American cars in every price class. Remember that the makers of these automobiles were buyers when they adopted the Gray & Davis System. They brought their engineering experience into play to enable them to select the best system to offer as part of their standard equipment.

We will be pleased to send catalog on request

GRAY & DAVIS, INC., BOSTON, MASS.

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yo

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The Only Real Way to Cut Tire Cost

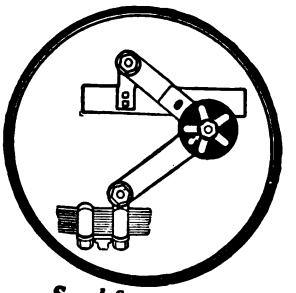
An ordinary emery wheel, revolving at high speed, "plays hob" with any resisting substance brought in contact with it.

And when a rear tire in passing over a rough road rebounds clear of the surface, its revolutions while freed of its load are increased tremendously. In the slowing down process that must necessarily follow when traction is again resumed, the tread is seared and wastefully ground away.

In this instance it is the tire as the weaker substance that must yield. The wear and tear on its casing from just one such occurence as this is almost as much as the total tire wear on a full day's run.

These illustrations are cited to emphasize the vital importance of eliminating the violent spring rebounds that throw the wheels of the car in the air. Continual contact with the road surface is essential to full service from your tires and *possible* only through the use of Truffault-Hartford Shock Absorbers.

These absorbers do actually keep the wheels of the car *on the ground.*



Send for catalog

The excessive spring rebounds are stopped. Greatly increased tire mileage is a certainty and those parts of the car that suffer most at the hand of jolts and jars, are prolonged in life.

Apart from these actual economies—representing a saving that is a hundred times greater than the cost of Truffault-Hartford equipment—these absorbers make comfortable motoring a reality on roads of every description. No other motoring accessory contributes more to the comfort and economy of car owners than the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer and the Best"

Can any car manufacturer claiming "full equipment" for 1914 afford to omit this device—a device which has already become standard equipment on twenty-five leading American cars? And can any man afford to buy a car that does not include this *necessity* to the greatest comfort and car economy? Five models including the New Automatic, ranging in price from $15 to $60 per set of four.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay Street, Jersey City, N. J**

Manufacturers of Hartford Electric Lighting and Starting System

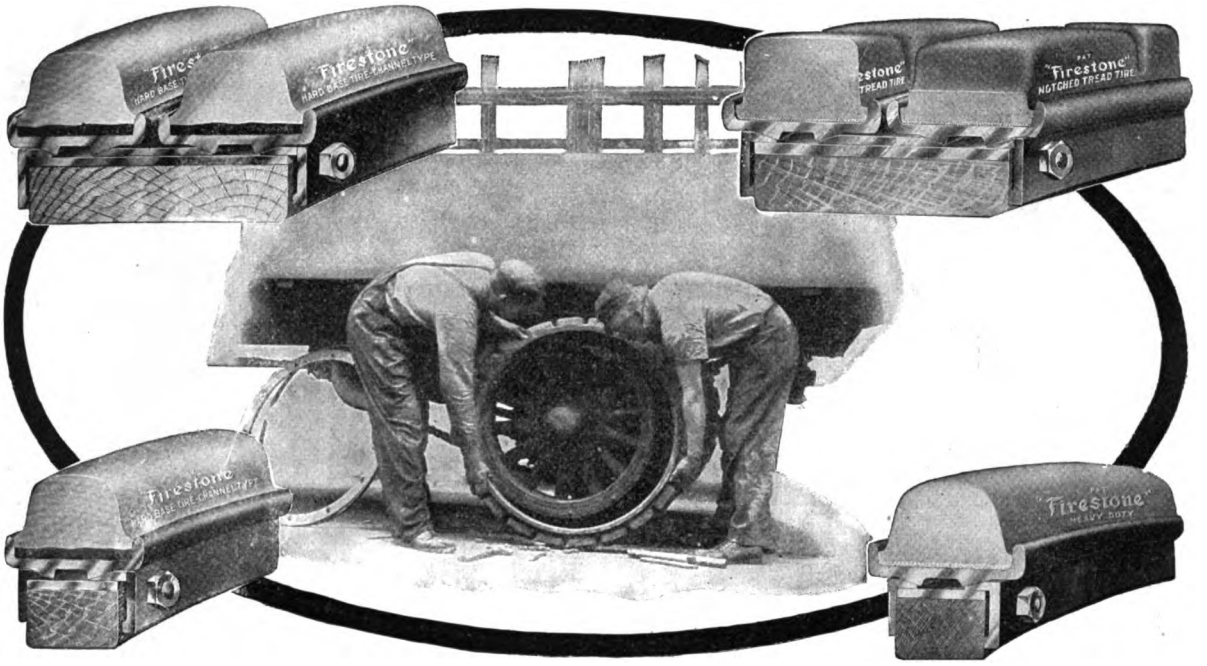
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Boston—319-325 Columbus Ave.
Chicago—1458 Michigan Ave.
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Newark—311 Halsey St.
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Jas. G. Barclay, 720 Main St., Buffalo, N. Y.
Dyke Motor Supply Co., Pittsburgh, Pa.

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Firestone
Truck Equipment

Solves the Problem of The "Extra Tire"—the "Emergency Replacement"

Firestone Quick Removable Rims are the key to the situation. Simply because they really *are* easy to remove and replace. Any driver can make a replacement in a few minutes—or, in the case of a heavy truck, any driver and his helper.

Our local service station will change over the wheel equipment of your trucks promptly. Then you will be *insured* against costly and annoying delivery hold-ups.

The Firestone service stations are in all large cities, and they are the most efficient in the business. All Firestone equipment is built to S. A. E. standard. So, regardless of your present equipment, we can serve you best, whatever your tire requirements may be.

No equipment, however, can give you *full efficiency*, no matter what service you get, except the simple Firestone Quick Removable Equipment.

Let a Firestone man call and talk it over. Let him show you the various types of Firestone tires and give you the benefit of his knowledge and experience, in selecting the style best suited to your needs. It is in this way that you will eliminate your truck equipment difficulties and insure yourself—

Most Miles Per Dollar

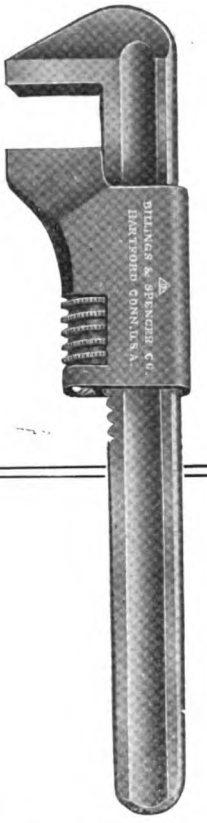
Call Your Local Firestone Branch or Write Us. Catalog on Request.

The Firestone Tire & Rubber Co., Akron, O.—All Large Cities

"America's Largest Exclusive Tire and Rim Makers"

Pneumatic Tires, Truck Tires, Pleasure Electric Tires, Carriage Tires, Fire Apparatus Tires, Rims, Tire Accessories, etc.

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Billings & Spencer Tools

"The Tools That Are Guaranteed"

B. & S. factories are equipped with the most modern and complete facilities for the production of tools and forgings.

B. & S. auto tools, steering connections, drop-hammer equipment, stock and special forgings provide the maximum of service.

By individuals and manufacturing industries they are universally known and preferred.

B. & S. tools are consistent dealer profit earners—they make customers and hold them.

Write for catalog

The Billings & Spencer Co.

HARTFORD, CONN.

THE MARK OF QUALITY B THE BILLINGS & SPENCER CO. HARTFORD

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, October 30, 1913 No. 6

JOHNS-MANVILLE TO MARKET JONES SPEEDOMETER OUTPUT

Having Added Mezger Spark Plug to Its Line, Big Company "Goes into" Speedometers—To Take Over Entire Jones Sales Dept.

Evidence that the H. W. Johns-Manville Co., of New York, is bent on becoming a factor in the automobile accessory trade which must be reckoned with at all times, continues to accumulate. As one of the largest manufacturers of asbestos products, its brake lining long since gave it standing in the automobile industry, but it was not until it added spark plugs that the trend of its policy was made plain. It was made still more distinct when, five weeks ago, it acquired the C. A. Mezger Soot Proof spark plug and took over the entire sale of that article.

Even more surprising, and making wholly clear its intentions with regard to automobile accessories, the Johns-Manville company has just completed negotiations whereby it will market the entire output of Jones speedometers. The arrangement becomes effective November 1st, when the Johns-Manville people will take over the entire Jones sales department, of which A. J. Interrieden is sales manager, but whose health is such that four months ago he had to seek the climate of the Adirondacks, where he is still recuperating. The head of the Johns-Manville sales department is L. R. Huff.

With the worry of marketing his product off his mind, J. W. Jones, the inventor of the speedometer, will be able to devote himself solely to its manufacture in his factory in New Rochelle, N. Y., which, of course, will be continued.

As the Johns-Manville company maintains 47 branches, and also has approximately 500 selling agencies, that it is positioned to make its influence felt in any line of endeavor is apparent. The work of expanding the scope of the business is claiming the personal attention of T. F. Manville, the president of the big comporation.

Lewis Reenters Automobile Manufacture.

When, in February last, William Mitchell Lewis relinquished the presidency and general management of the Mitchell-Lewis Motor Co., of Racine, Wis., and was succeeded by James Winterbotham, Jr., the direct representative of the bankers who had floated the $2,500,000 note issue, it was stated that Lewis thereafter would devote himself to the Racine Rubber Co. and a newspaper in which he was interested. Like many other similar statements, however, it proves to have been more diplomatic than correct, as it now transpires that since his retirement Lewis has been engaged in the formation of another company for the manufacture of automobiles. Formal announcement of the fact was made early this week when the Lewis Motor Co., of Racine, capitalized at $250,000, was incorporated with William Mitchell Lewis and Rene Petard as the chief incorporators. They will manufacture a medium-priced light "six," deliveries of which are promised February 1st.

Date Set for New York Dealers' Meeting.

November 20th has been set as the date for the meeting at which a State association of New York automobile dealers will be brought into being. It will occur in the Hotel Ten Eyck in Albany. The Automobile Dealers' Association, of New York City, which is leading the movement, has already retained counsel and a tentative plan of organization is being prepared.

Reliance Speedometer Registers Zero.

The Reliance Speedometer Co., of Boston, Mass., has filed a voluntary petition in bankruptcy and is in the hands of a receiver. Its liabilities are $29,564 and its assets $7,146. The largest unsecured creditor is the Daniel H. Newton Estate, whose claim, for money advanced, amounts to $18,926.

BAD YEAR FOR POPE LEADS TO A THIRD RECEIVERSHIP

Stockholder and Creditor Take Action as Initial Step in Rehabilitation of Business — Maturing Notes Precipitate Crisis.

Not unexpectedly, the Pope Mfg. Co., of Hartford, Conn., went into the hands of a receiver on Monday last, 27th inst. The receiver, who was named by Judge Tuttle sitting in the State Superior Court, is Col. George Pope, treasurer of the company, who is also president of the National Association of Manufacturers and treasurer of the Automobile Chamber of Commerce. His bond was placed at $200,000. Col. Pope was also to be named ancillary receiver by the Massachusetts court, the company having a bicycle and motorcycle plant in Westfield, Mass., but action in that State has been deferred.

The receivership was quite clearly forecasted by the annual report of the Pope company, which was made public early this month, and which showed that this year's operation had netted a loss of $67,551, as against a profit of $251,290 during the previous fiscal year.

The report, which covered the 12 months ending July 31st, placed the company's assets at $9,090,081.76, of which $3,734,109.95 are represented by patents, good-will, etc., $2,506,960 by real estate, buildings, machinery, etc., and $1,688,747 by material and other stock on hand.

Its liabilities, exclusive of outstanding stock to the value of $6,019,000, totaled $2,971,081.76. Of the latter sum, $1,000,000 was represented by gold notes, due April 1st next, $510,000 by loans payable and $534,314.67 by accounts payable — three items which, coupled with the dates of maturity, clearly indicated the proximity of a receivership.

The application for a receiver was filed by one merchandise creditor and one stock-

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holder of the company, who acted in an endeavor to conserve the assets and prevent drastic action on the part of unfriendly creditors, of whom there are a few.

Both factories are being operated as usual, and it is confidently expected that the creditors will be paid in full and that the stockholders will receive a substantial dividend on their holdings, or will be put in a position to reorganize the company on favorable terms.

One report attributed at least part of the embarrassment to differences existing between what were described as the Pope and Walker interests in the company, when, as a matter of fact, complete harmony has always prevailed at all times. Indeed, the Walker interests, represented by Charles E. and Wilbur Walker, vice-president and secretary, respectively, are purely nominal. Both of the Walkers have been identified with the company for very many years, Charles E. having risen from the position of the late Col. Albert A. Pope's office boy to his present post of vice-president.

This marks the third occasion when the Pope Mfg. Co. has been in the hands of a receiver. Established in the late 70's by Col. Albert A. Pope, it became the largest producer of bicycles in the world and was at the top of the heap wher it became a part of the $40,000.000 American Bicycle Co., the so-called bicycle trust, which was organized in 1899 and which went broke in less than two years later. It was reorganized under the style American Cycle Mfg. Co., of which Col. Albert A. Pope became president, but the ill-starred enterprise again went into bankruptcy and Col. Pope purchased what was left of the enormous wreck, including his original plant in Hartford. He again operated it as the Pope Mfg. Co. and when the automobile first showed signs of promise he promptly embraced it, being the chief factor in the Electric Vehicle Co., whose cars, like Pope's bicycles, were named Columbia. Later he also produced the Pope-Toledo in Toledo, O., in the same plant which proved the nucleus of the present Willys-Overland group.

The Pope company continued to produce bicycles, and later motorcycles, in large quantities, but somehow or other its dipping into gasolene was followed by a succession of financial stringencies of which the present, as stated, is the third. According to reports that are current, when reorganization is effected this time, the gasolene, that is, automobiles, will be left out.

Oakland Plans Factory Enlargement.

The Oakland Motor Car Co. has placed contracts for an addition to its plant in Pontiac, Mich. It will be a three-story structure, 70 x 70 feet.

CHASE PREPARES TO BUILD A GASOLENE TRACTOR PLOW

Truck Maker Has Spent Three Years on Device—Will Build Additional Factory—Capital Added Last Year for This Purpose.

Having developed a gasolene traction plow, which it has been bringing to perfection for some three years, the Chase Motor Truck Co., of Syracuse, N. Y., is now making active preparations to manufacture and place it on the market. This intention, it is stated, was the real meaning of the company's increase of capital from $150,000 to $300,000.

The increase was authorized last year, but the additional capital has since been held in the treasury pending final demonstrations of the practicability of the plow, thorough tests of which have been conducted on the Hazard farm in Camillus, which is close by Syracuse, as well as on several larger farms in the West.

The $150,000 added capital which is in hand will be used for the purpose of constructing a plant in Syracuse specially for the production of plows, which, however, will in no way interfere with the company's output of trucks.

Grossman Recognizes Barber's Patent.

The Emil Grossman Mfg. Co., of New York City, having purchased an interest in the William Barber spark plug patent, No. 732,032, the suit recently instituted by Barber in the United States District Court for the Southern District of New York against the Lowe Motor Supplies Co., also of New York City, probably will be discontinued within a few days; the Lowe company was sued on the grounds that the Red Head plug—made by Grossman—which it handled infringed the Barber grant, and the Grossman company has seen fit to recognize merit in the complainant's invention and patent.

Barber's patent claims to cover a plug wherein the insulation is of two separate pieces, one piece brittle porcelain and the other of a less brittle material. Other suits were filed at the same time against retailers of Sootless and V-Ray plugs.

Square Horn Discloses its Ammunition.

Having been directed by the United States District Court for the Southern District of New York to specify the patents and instances of priority upon which it intends to stand in the action brought aaginst it by the Lovell-McConnell Mfg. Co. for alleged infringement of the Klaxon horn patents, Nos. 923,048, 923,049 and 923,122, the Square Horn Mfg. Co., Inc., this week filed a bill stating these particulars.

The American patents which it is claimed cover and antedate the Klaxon invention are: Bapst and Falize, 384,412, June 12, 1888; A. N. Pierman, 620,958, March 14, 1889; and A. H. Gould, 785,874, March 28, 1905. English patents: Hope Jones, 26,737, of the year 1901, and Geiseler, 21,084, of the year 1900. Instances of prior use: Wagle motorphone, 1882, in Germany; Alden T. McMurtry, of New York, who applied for patent No. 251,901, March 24, 1905, and used his device before that date. The company also cites its own invention as a prior use.

The Salvini Electric Horn Mfg. Co., Inc., which is closely allied with the Square Horn company, filed a similar bill in a similar suit brought against it on the same grounds.

Bad Year for Canada's Biggest Maker.

Attributing it to the necessity of making its Knight engine in Canada, and of effecting other important changes, and the delay incident thereto, the Russell Motor Car Co., of Toronto, by far the biggest automobile enterprise in the Dominion, reports a net loss of $152,826 for the fiscal year which ended July 31st. Last year the company paid a dividend of $180,127, dividends of 7 per cent. on the preferred and 3½ on the common having been disbursed, according to the annual report, which made its appearance last week. As the profit balance of $303,233 was brought over from last year, there still remains a balance of $38,307. Dividends, it is announced, have been suspended until further notice.

Court Confirms Sale of Cutting Assets.

The referee in bankruptcy has confirmed the sale of the plant and equipment of the Cutting Motor Car Co., in Jackson, Mich., which, as stated by Motor World last week, was bid in by the Harris Bros. Co., of Chicago, who guaranteed the purchasers $35,000 and who also assumed encumbrances amounting to $30,000 more. The property had been appraised for $268,653.

Not the least interesting feature of the receiver's sale was an offer of $25 made for Bob Burman's big Cutting racing car. Needless to add, it was refused.

Auction Sale Marks End of Middleby.

The property of the Middleby Auto Co., of Reading, Pa., is due to be sold today at auction. Although the company never cut a very large figure in the industry, it is possessed of 478 separate lots of machine tools and other machinery, apart from a considerable quantity of finished and unfinished parts of the Reading Forty automobile.

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THROPP, TIRE MOLD MAKER, TAKES WHACK AT U. S. TIRE

Beaten by Fisk in Suit Over "Wrapped Tread" Mold Patent, Strikes in New Direction—Charges Duplication of Device.

Even though it lost in a four-year legal fight against the Fisk Rubber Co. over their "wrapped tread" tire mold patent, No. 822,561, granted June 5, 1906, The de Laski & Thropp Circular Woven Tire Co. and the John E. Thropp's Sons Co., of Trenton, N. J., evidently have determined to strike in another direction; this week they filed suit in the United States District Court for the Southern District of New York against the United States Tire Co., alleging that the latter infringes the patent, which was granted to Peter D. Thropp.

The invention "relates more particularly to apparatus holding a clincher tire in position during the vulcanizing process," and is made and leased for use in the manufacture of what has become known in the tire trade as a "wrapped tread." The suit against Fisk was carried to the United States Circuit Court of Appeals, which confirmed the victory won by Fisk in the lower court. The Fisk defense was based largely upon prior uses by the B. F. Goodrich Co. of a tire mold, and the court failed to agree with Thropp's claim that these were mere experiments.

In its bill of complaint in the action against the United States Tire Co. the Thropp companies state that Ernest Hopkinson, of East Orange, N. J., now a United States Tire attorney, and Thomas Midgley, of Hartford, Conn., who has an embedded-wire tread tire named after himself, applied December 19, 1905, for a patent covering the same thing previously patented by Thropp. Their patent was granted October 13, 1908, under the number 901,006, and later was assigned to the Hartford Rubber Works Co.

September 15, 1906, they claim that Charles L. Pepper, of Indianapolis, applied for a patent covering the Thropp invention, which application and all interest in the invention were sold to Morgan & Wright. The United States Tire controls both of these corporations and is therefore made the defandant. The Thropp companies claim their application antedates both these other applications and that in an interference proceedings in the patent office many of the Thropp claims were recognized as having priority over those of the other applicants.

Despite these alleged facts, the Thropp companies claim the defendant has made and used infringing molds which has greatly damaged the Thropp companies' business.

Koehler's E-M-F Suit Finally Settled.

An echo of the days when the names Everitt, Metzger and Flanders were first linked as manufacturers of a car was heard this week in the Supreme Court for New York county when an action instituted nearly four years ago by the H. J. Koehler S. G. Co., of New York City, against the Everitt-Metzger-Flanders Co. was settled.

The suit was the outgrowth of Koehler's dealership in E-M-F cars during the selling year of 1908-9; after his contract had expired he claimed the manufacturing company had failed to furnish enough cars to fill orders he had secured, and he demanded $100,000 to compensate him for lost profits on these uncompleted sales. The terms of the settlement were not made public beyond the bare statement that the sum paid to the Koehler company was "substantial."

The settlement was made by the Studebaker Corporation, which took over the E-M-F and rechristened it Studebaker, finally replacing it with a thoroughly Studebaker model.

Lamb Abandons His Ohio Truck Project.

Inability to sell sufficient stock has caused the National Motor Truck & Mfg. Co. to abandon its purpose of erecting a plant in Gibsonburg, O. The project was fathered by Frank E. Lamb, who once was connected with Gramm Motor Car Co., of Lima, O., who has washed his hands of the affair, having resigned the offices of president and general manager. The other officers are: A. T. Crossett, first vice-president; C. H. Hutchinson, second vice-president; John O'Leary, secretary, and J. A. Nieset, treasurer.

Woodard to Leave the Woods Electric.

O. J. Woodard, sales manager of the Woods Motor Vehicle Co., of Chicago, has resigned that position, his resignation taking effect January 1st next. Except that he purposes spending several months in recreating in Southern California, Woodard, who, until he "went into" Woods electrics, was for many years high up in the Diamond Rubber Co.'s sales department, has no definite plans for the future.

Fulton Moves from Iowa to Wisconsin.

Having incorporated under the laws of Wisconsin with an authorized capital of $25,000, the Fulton Co., maker of the Aermore exhaust horn, has removed from Marshalltown, Ia., to Milwaukee, Wis. Its new plant in the latter city will be located at 726 National avenue.

INTERNATIONAL WRANGLE IS CARRIED TO SUPREME COURT

Minority Stockholders Check Mortgage Proceedings by Asking for Receiver — Basis of Fraud Charge—Calder Retires.

Those minority stockholders who, on a technicality, were barred from last week's meeting of the International Motor Co., of New York, made good their threats to take the matter into court, and they lost no time in doing so.

Their action took the form of an application, on Thursday last, to the New York Supreme Court in Brooklyn, not only for an injunction restraining the authorization of the desired and very necessary $1,200,000 mortgage, but for the appointment of a receiver and the winding up of the concern.

A temporary injunction was granted but the court declined to appoint a receiver without further argument, and at a second hearing, held yesterday, Judge Garrettson indicated that he was not favorable to making the injunction permanent nor to the appointment of a receiver. He will consider additional briefs today.

Meanwhile, things have happened within the inner circle of the big company itself, John Calder, who only recently assumed the presidency, resigning that office and being succeeded by Vernon Monroe, former secretary of the corporation, the latter office being added to the duties of B. A. Guy, treasurer.

The minority stockholders' complaint, filed in the name of George E. Blakeslee, of Jersey City, who holds 400 shares of International stock, alleges that the directors were arranging for the placing of the $1,200,000 mortgage without consulting the interests of the stockholders, that proper notification had not been given him and that his every effort to obtain information had been met by rebuffs.

Alleging that fraud had been committed when the Mack and Saurer truck companies were merged into the International Motor Co., it was stated that, while an appraisal of the Mack concern's assets showed a net tangible value of $1,250,000, the Saurer had only between $4,000 and $5,000 worth, according to one auditing concern. This company held that the annual minimum royalties, running from $20,000 to $40,000, which must be paid to the holder of the Saurer patents represented an actual liability aggregating over $300,000. The Saurer interests maintained that, as the payments were deferred, they should not be included in the list of liabilities. The whole charge of fraud simmered down to the

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point whether the royalty payments should be considered a liability. Judge Garretson said he thought they should, but did not make any final decision.

It was alleged by the complainants that, although the Mack company owned the largest part of the International's assets, the old Mack interests were almost entirely ignored by the Saurer people, who assumed control of the International, and appointed as its managers friends and relatives who had no real knowledge of the automobile business.

It was brought out that instead of executing a $1,200,000 mortgage as planned, the controlling faction of the International company now wants to borrow $500,000 at once and $500,000 additional in the near future, in order to carry on its operations. It was stated by attorneys for the defence that creditors, including banks, holding obligations aggregating $2,100,000, have agreed to defer their claims until the International is in better shape to pay them. In addition to the $2,100,000, the company owes $350,000 on merchandise bought.

It was further held by the defendants that the minority had brought a misjoined suit, and that the court had no power to appoint a receiver since it was not the International company that was directly concerned in the basic agreement but rather certain individuals.

The minority claims that the new loan is wanted to reimburse the large stockholders who loaned the International $1,500,000 in 1912. This was denied, however, and it was asserted that it would be made on an actual 6% basis without any bonus being given to anyone. Of the 1912 loan it was testified only $675,000 was available for working capital, the balance being needed to meet outstanding obligations. It was admitted that the International has been losing money this year and must have additional funds.

In the original consolidation stockholders of the Mack company were given $125 of International preferred and $187.50 of common stock in exchange for each $100 of Mack stock owned, while the Saurer company was taken over for par at $600,000. Its assets were appraised as of August 31, 1911, at $514,992, and stockholders made up the difference of $85,000 in cash.

Sale of Schacht Assets Not Completed.

Having disposed of the equipment and stock on hand, the receiver has fixed November 10th as the date on which the real estate and buildings of the Schacht Motor Car Co., of Cincinnati, will be offered for sale. The other property was disposed of piecemeal and brought fair prices, many individuals bidding in the 40 cars that were put up.

"GOES BROKE" TRYING TO CUT EXPENSE FOR OTHERS

Delivery Supervision Concern Ends its "Truck Watching" Career in Bankruptcy—Leased Meter to Record Truck Movements.

Claiming that the assets are but $30,000 and the liabilities $75,000, three creditors Saturday, 25th inst., filed a petition in bankruptcy against the Delivery Supervision Co., of 733 7th avenue, New York City; the creditors and claims are: American Taximeter Co., $44,329; W. E. Pruden Hardware Co., $28; Webb Mfg. Co., $67. It is charged that the company has admitted its inability to meet its obligations and has made preferential payments.

The company was incorporated January 15, 1913, with a capitalization of $1,000,000 and took over the business of the International Supervision Delivery Co. It made and leased a meter which records the time and distance traveled and the speed of a commercial vehicle. It maintained a department which reported to truck owners the record of each truck daily, and while it has 2,000 meters valued at $30,000 out at lease, it found that this part of the business was not profitable. The other assets consist of dies and tools in the possession of and on which the Regina Co., of Rahway, N. J., claims a lien. William M. Lybrand was appointed receiver, and it is stated that some of the creditors believe a satisfactory plan of reorganization can be worked out.

New Receiver Named for Inter-State.

Growing out of its action in filing a voluntary petition in bankruptcy in the State court, as stated in last week's Motor World, three creditors of the Inter-State Automobile Co., on Thursday last, filed a petition in bankruptcy in the United States District Court in Indianapolis which led to the appointment of Rollin Warner, an attorney, of Muncie, as receiver. The latter will supersede Michael Broderick, who was appointed by the State court. The three creditors who acted in the matter are Margaret Jenks, of Port Huron, Mich., Union Drop & Forge Co., of Chicago, Ill., and the Merchants' Delivery Co., of Muncie. Their claims aggregate $6,660.70.

Fischer Carries Flexible Shaft Higher.

Charles Fischer, who holds a patent on a flexible shaft, is hopeful that the appeal of his infringement suit against the Automobile Supply Mfg. Co., of Brooklyn, N. Y., which was argued this week in the United States Circuit Court of Appeals in New York City, will result less disastrously than it did in the lower Federal court in Brooklyn, which dismissed the complaint when it came before him last January.

Fischer's patent is No. 969,660 and was granted September 6, 1910, to Franz Schmidt and Albert Grundmann, of Berlin, Germany, and has undergone several assignments since its issuance. It claims to cover a shaft which is made of a tightly coiled wire surrounded by a coiled metal strip, coiled in the same direction and fitting into the depressions between the coils of wire. The Automobile Supply Mfg. Co. is best known as a manufacturer of horns, among them the Newtone.

Laciar Gets Part of What he Asked.

Robert J. Laciar filed suit a year ago for $15,000 against the Jackson Motor Co., Jackson dealer in New York, but when his case was disposed of last week in the Supreme Court for New York county the sum was cut to $1,685; Laciar claimed he contracted July 1, 1912, to be sales manager, that his salary was to be $3,600, that unless he disposed of 25 cars by October 1, 1912, the contract might be cancelled, that if he disposed of 400 cars by February 1, 1913, his salary was to be $5,000 a year, and that this was to carry with it a commission of $10 a car. He stated that he sold 190 cars by October 1 and that the company cancelled his contract the next day, whereupon he sued.

Date Set for Sale of R.C.H. Assets.

November 11th has been set as the date for the receiver's sale of the assets of the R. C. H. Corporation of Detroit. The property will be offered both in parcels and in bulk. According to the latest appraisal, it is valued at $807,197.61, of which $201,000 is represented by real estate and buildings, $213,889.75 by plant equipment and machinery, $313,968.28 by material, supplies and branch stocks, $14,530 by cars, $60,634.58 accounts receivable, and $3,175 notes receivable.

British Car Maker May Build in Canada.

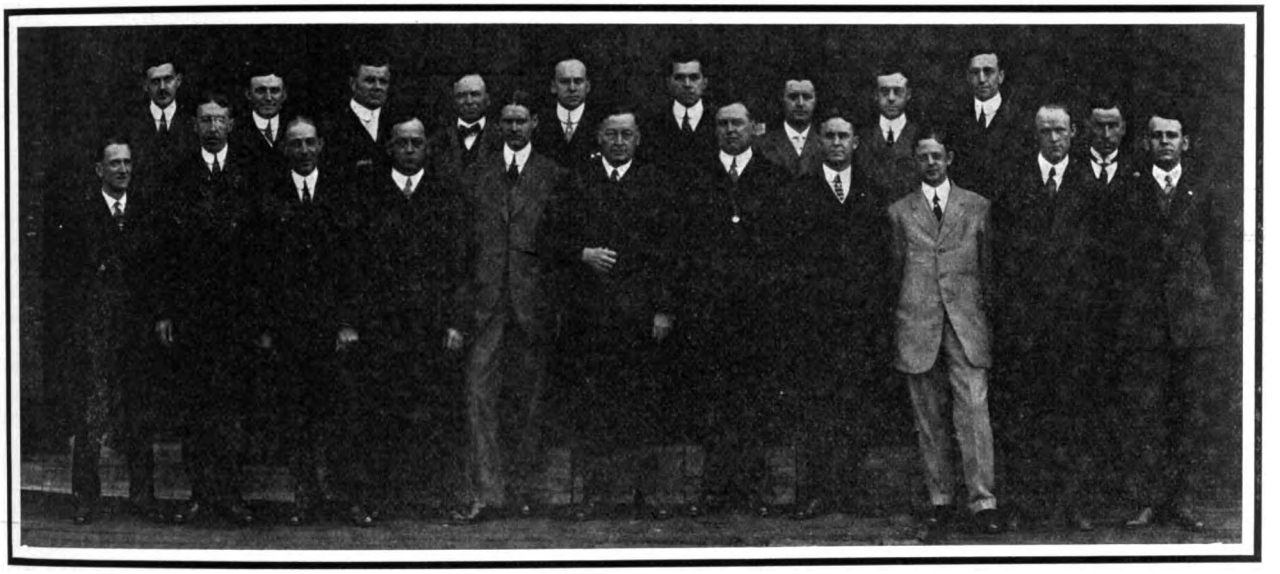
James Warren, managing director of the Peerless Motor Co., of Birmingham, Eng., has opened an office in Montreal and has taken steps toward the formation of a $500,000 Canadian company for the reproduction of British Peerless cars in the Dominion. G. F. Evans, a former railroad man, has been appointed general manager of the enterprise.

Houghton Dealers Meet Bankruptcy.

A voluntary petition in bankruptcy has been filed by Burt Williams and Thomas Seecombe, who traded in Houghton, Mich., as the Houghton Automobile Agency; liabilities are $6,745.65 and the assets $2,840.

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The Week's Incorporations



ENGINEERING AND SALES STAFF OF THE WILLARD STORAGE BATTERY CO. GROUPED IN FRONT OF THE PLANT IN CLEVELAND, O., ON THE CLOSING DAY OF THE ANNUAL CONVENTION

Boston, Mass.—Franklin Motor Car Co., under Massachusetts laws; authorized capital, $10,000. Corporators—Otto A. Lawton, Harold D. Cushman.

Pine Bluffs, Ark.—Sonyard Automobile Co., under Arkansas laws; to operate a garage and conduct a general automobile supply and repair business.

Cincinnati, O.—Central Auto Repairs Co., under Ohio laws; authorized capital, $30,000. Corporators—George F. Oster, Paul V. Connolly, Samuel Stern.

Springfield, Mass.—Taxi Cab Service Co., under Massachusetts laws; authorized capital, $115,000. Corporators—A. E. Williamson, F. B. Nicholas, J. E. Costello.

Indianapolis, Ind.—Briskin-Wolsifer Mfg. Co., under Indiana laws; to manufacture and sell automobile parts. Corporators—J. H. Briskin, C. C. Wolsifer, H. W. Bullock.

Chelsea, Mich.—Motor Products Co., under Michigan laws; authorized capital, $100,000; to manufacture motor vehicles Corporators—Joseph S. McDowell and others.

Okmulgee, Okla.—Transcontinental Garage Co., under Oklahoma laws; authorized capital, $5,000. Corporators—L. G. Bradfield, X. H. Gill and A. J. Gill, all of Okmulgee.

Boston, Mass.—Palmer & Singer Motor Co. of New England, under Massachusetts laws; authorized capital, $25,000. Corporators—E. A. McGrath, J. M. Hurley, C. A. Hurley.

Brockton, Mass.—White Automobile Co., under Massachusetts laws; authorized capital, $30,000. Corporators—R. Litchfield, S. H. Freedman and P. H. Simons, all of Brockton.

Boston, Mass.—Parker Carbureter Co., under Massachusetts laws; authorized capital, $250,000; to manufacture carburetters. Corporators—G. E. Parker and J. T. Clark, both of Boston.

Detroit, Mich.—American Motor Truck Co., under Michigan laws; authorized capital, $5,000; to manufacture motor trucks. Corporators—A. H. Reinhold, W. K. Ackerman and others.

Detroit, Mich.—Sterling-Detroit Motor Co., under Michigan laws; authorized capital, $105,000; to manufacture motor vehicles. Corporators—H. Little, E. Finkensteadt and others.

Indianapolis, Ind.—New Departure Mfg. Co., under Indiana laws; authorized capital, $5,000; to manufacture machinery and tools. Corporators—J. R. Fry, I. A. Phillips, C. E. Phillips.

St. Joseph, Mo.—Grand Center Motor Car Co., under Missouri laws; authorized capital, $5,000. Corporators—Eugene Rosenbleet, M. J. Handler, M. Reich, H. R. Lewis, Lewis Siegel.

Portland, Ore.—Frank C. Riggs Co., under Oregon laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—Frank C. Riggs, L. A. Howard, E. J. Clark.

Sioux City, Ia.—Motor Mart Co., under Iowa laws; authorized capital, $200,000; to deal in motor car accessories and conduct a general repair business. Corporators—R. A. Bennett and others.

Rockford, Ill.—Cotta Gear Co., under Illinois laws; authorized capital, $10,000; to manufacture and sell motor car parts, motors and motor parts. Corporators—Chas. Cotta, L. P. Cotta, H. B. North.

Chicago, Ill.—Ohio Motor Co., under Illinois laws; authorized capital, $5,000; to deal in motor vehicles, parts and accessories. Corporators—Joseph Slottow, Samuel C. Wood, Fred C. Churchill.

St. Louis, Mo.—Reliance Buggy Co., under Missouri laws; authorized capital, $200,000; to manufacture and sell buggies, automobiles, trucks, etc. Corporators—P. E. Ebreng, Alpha T. Stevens, Frank W. Edlin.

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ELECTRIC MAKERS ELECT AND DISCUSS MANY TOPICS

Frank W. Smith Succeeds Arthur Williams as President at Annual Convention in Chicago—Long List of Papers Read.

What is undoubtedly the largest gathering of members of the Electric Vehicle Association of America took place on Monday, 27th inst., in the La Salle hotel in Chicago, Ill., the occasion being the fourth annual convention of the organization. The outcome of the election placed Frank W. Smith, vice-president of the United Electric Light & Power Co., of New York, in the president's chair, relinquished by Arthur Williams, who is general inspector for the New York Edison Co., who, however, was elected a member of the board of directors. Smith was vice-president of the association and his place is taken by J. F. Gilchrist, of the Commonwealth Edison Co., of Chicago; Harvey Robinson, of the New York Edison Co., and Day Baker, New England manager of the Edison Storage Battery Co., were re-elected secretary and treasurer, respectively. On the board of directors, both Wm. P. Kennedy, consulting transportation engineer, and W. G. Bee, vice-president of the Edison Storage Battery Co., were re-elected, and C. N. Stannard was elected to serve his first term.

Following out the set program, Dr. E. E. Pratt, manager of the industrial bureau of the Merchants' Association of New York, opened the first business session with a paper entitled "Traffic Problems and the Automobile," in which he laid great stress upon the necessity for cooperation, rather than antagonism, between the law makers and the general public. Following Dr. Pratt, F. Nelson Carle presented a paper entitled "The Merchant, the Central Station and the Electric Truck," and this was followed by a paper entitled "Cooperation Between the Electric Vehicle Manufacturer and the Central Station," by E. L. Callahan. On Tuesday, the session was opened by M. R. Berry of the Electric Products Co., whose topic was "Charging Storage Batteries in Unattended Garages."

The remainder of the set program included talks by G. H. Kelly and E. J. Bardell of the Baker Motor Vehicle Co. on electric vehicle salesmanship; C. A. Duerr, of Gimbel Bros., and D. L. Tobias, of the United Electric Light & Power Co., on the electric vehicle in department store service; Bruce Ford of the Electric Storage Battery Co. on recent developments in the lead battery for vehicle work; and F. A. Whitney of the Commercial Truck Co. on electric commercial vehicle tires. Except for "time out" for theater parties and a dinner ,the whole of the two days of the convention was devoted to set papers.

"Model Bookkeeper" and $5,000 Missing.

Search is being made for Thomas A. Payne, formerly of 2300 North Springfield avenue, Chicago, who until September 18 was cashier of the Haynes Motor Car Co., of 1792 South Michigan avenue; following his disappearance an examination of his books is said to have revealed a shortage of $5,000, and Harry R. Doty, superintendent of the Haynes company, has sworn out an embezzlement warrant, naming that amount. Payne was regarded not only as a "model bookkeeper" but as a "model young man."

Splitdorf Incorporates Two Branches.

The Splitdorf branches in both Detroit and Chicago have both been transformed into separate corporations, the former styled Splitdorf Electrical Co. of Detroit and the latter the Splitdorf Electrical Co. of Chicago. The officers of the former are C. E. Brelsford, president; H. J. Finley, treasurer and manager, and W. J. Murray, secretary. The officers of the Chicago establishment are R. S. Preble, president and manager, and E. A. Kelley, secretary and treasurer.

Typhoon Blows from Chicago to Lincoln.

The Typhoon Signal Co. has completed its removal from Chicago to Lincoln, Ill., where its new plant just has been completed and where the manufacture of the Typhoon $4 electric horn will be conducted on a large scale. R. P. Hartenstein remains president of the company and J. F. O'Brien secretary and treasurer. The superintendent of the plant, however, will be a new man, Morton G. Bunnell, who for 26 years was superintendent of the Austin Mfg. Co. of Chicago.

Advertising Account Leads to Judgment.

A verdict for $1,022.87 was given to the Van Cleve Co., a New York advertising agency, against the Abbott-Detroit Motor Co., of New York, in the Supreme Court for New York county last week; the amount represents an advertising account. The Abbott company was the metropolitan distributer of that line of cars until relations between it and the Detroit company were severed several months ago.

Losey Oakland Manager at Minneapolis.

R. H. Losey, who for many years has been identified with the Buick interests, has been appointed manager of the Minneapolis branch of the Oakland Motor Car Co. He succeeds J. W. Martin.

AMERICAN POSSESSIONS BUY LESS CARS FOR MORE MONEY

High Cost per Car Brings Total Value up 10 per Cent. and Number Down 8 per Cent. in August—Philippines the Largest Buyer.

The non-contiguous American possessions, which are not included in foreign export statistics by the Federal statisticians, bought more cars for less money in July of this year, but in August the tables were reversed, the possessions buying fewer cars for more money as compared with August of the previous year. The number of cars purchased decreased from 96 to 88, but the value rose from $121,876 to $134,770, a gain of $12,894, or 10 per cent., in value and a loss of 8 cars, or 8 per cent.

Another reversal of conditions in the two months is that whereas the average value of the cars decreased by $290 in July, it increased by $262, or 20 per cent., in August. In August, 1912, the average cost was $1,269 and in August, 1913, $1,531. The Philippines continue to lead as buyers of American cars, taking 59, valued at $79,301. It made the only substantial gain, also, increasing its takings by 30 cars, or 104 per cent., and $47,739, or 151 per cent. The average price paid by the Philippines was $1,344 in August of this year and $1,088 in August, 1912, an upward movement of $256, or 23 per cent. Hawaii and Porto Rico both lost. Parts fell from $23,886 to $23,544, a loss of $342.

The export of tires is given for Hawaii and Porto Rico only and is as follows: Hawaii, August, 1912, $22,245; 1913, $39,603; gain, $17,358, 78 per cent. Porto Rico—August, 1913, $19,728; 1913, $46,043; gain, $26,315, 133 per cent. The figures in detail follow:

	August 1912 No.	August 1912 Values.	August 1913 No.	August 1913 Values.
Hawaii—Cars	42	$60,519	16	$39,522
Parts*	..	7,551	..	3,909
Porto Rico—Cars.	24	28,595	11	13,897
Parts*	..	7,443	..	5,495
Philippines—Cars	29	31,562	59	79,301
Parts*	..	8,215	..	13,431
Alaska—Cars	1	1,200	2	2,050
Parts*	..	677	..	709
Total cars	96	$121,876	88	$134,770
Total parts*	..	23,886	..	23,544
Total cars and parts*	96	$145,762	88	$158,314

	Eight Months Ending August 1912 No.	Eight Months Ending August 1912 Values.	Eight Months Ending August 1913 No.	Eight Months Ending August 1913 Values.
Hawaii—Cars	386	$628,022	427	$748,913
Parts*	...	47,446	...	62,230
Porto Rico—Cars	287	434,775	187	243,855
Parts*	...	81,882	...	59,610
Philippines—Cars	316	427,042	452	548,184
Parts*	...	44,673	...	46,866
Alaska—Cars	13	18,064	20	19,113
Parts*	...	3,635	...	2,870
Total cars	1,002	$1,507,903	1,086	$1,560,065
Total parts*	....	177,636	....	171,576
Total cars and parts*	1,002	$1,685,539	1,086	$1,731,641

* Does not include engines and tires.

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In the RETAIL WORLD

John Howard has opened a garage in Las Vegas, N. M.

Louis D. Baer, of Owensboro, Ky., will build a garage and repair-shop.

H. Tysinger, of Little Rock, Ark., plans to open a garage and repair-shop.

Arthur Greenlee is securing estimates on a garage to be erected in Hutchinson, Kan.

J. E Carson has opened salesrooms in the Pearce Garage in Macomb, Ill. He stocks Fords.

Ezra Connell, of Scranton, Pa., plans to build a garage on Clay avenue; it will cost $4,000.

Daily Bros., of Lincoln, Neb., are building a garage; it is located at 19th and O streets.

Arthur L. Smith, of Santa Maria, Cal., has transferred his Cadillac agency to the Crescent Garage.

Horace Rainey, of Columbia, Tenn., is about to erect a garage; the site is on South Garden street.

Heydt & Haas, of Reading, Pa., are about to erect a garage at 413-15 Washington street; it will cost $5,000.

The Moon Motor Co. of Illinois has taken possession of new salesrooms at 2612 Michigan avenue, Chicago.

Joseph Griffin & Co., of Mountain View, Cal., have taken over James Small's garage; possession was given immediately.

J. A. Huhn and George A. Maro, of Glendora, Cal., plan to build a garage on Vermont avenue; the cost will be $5,000.

E. R. Prittle, of Phoenix, Ariz., plans to build a garage on Center street; it will cost $34,000. He is State distributer of Cadillacs.

The Henry L. Walker Co., of Detroit, has taken possession of new quarters at 185 Jefferson avenue; the company handles Woods electrics.

The Diamond Garage Co., of Pittsburgh, Pa., has been granted authority to erect a one-story garage on Burd street; the estimated cost is $6,500.

William Bennett, of Peoria, Ill., has purchased the Illinois Garage, formerly occupied by C. W. Robinson; he handles gasolene and electric cars.

Middlesex Automobile Co. is the style of a new business in New Brunswick, N. J. It has located at 88 Albany street; George L. Burton is a principal in the corporation.

The Brockway Motor Truck Co., of Cortland, N. Y., has opened a branch in New York City at 250 West 54th street; a service department is attached to the establishment.

The Jackson Auto Sales Co., of Houston, Tex., has taken possession of new salesrooms at 1311 Main street; the Van Allen Tire Supply Co. is also a new tenant of the same building.

The Brazill Garage has been opened in Newton, Mass., on St. Mary street, near Commonwealth avenue; it is 100 x 100 feet and its equipment includes a turntable in the center of the floor.

A. S. Karesh and T. J. McDaniels, of Walterboro, S. C., have formed the Walterboro Auto Co. They will operate a garage in a building formerly occupied by the Collenon Auto Repair Co.

Royston Welch, of Oconomowoc, Wis., is about to open a garage; he will locate in a remodeled building on Milwaukee street, which before it was destroyed by fire last spring was a livery stable.

J. J. Harter, G. W. Patee and O. W. Chalfant, of Sac City, Ia., have formed the Harter Auto Co. and have purchased of S. M. Elwood the garage formerly occupied by Harter; they plan to erect a new building, 66 x 132 feet.

B. E. Bauer has sold his interest in the Elroy (Wis.) Garage & Machine Works to his partner, R. E. Gibbons, who will continue the business under the same name; Bauer will reenter the garage trade in Sterling, Kan.

The Blue Ribbon Auto & Carriage Co., of Bridgeport, Conn., has taken possession of the building on Fairfield avenue formerly occupied by the Bellamore Carriage Co. This structure contains about 80,000 feet of floor space.

Eugene McKenna, of McKenna's stables, is erecting a garage and repair-shop in Baltimore at 810-14 East Lexington street; this affords accommodations for 80 cars and McKenna is considering converting his stables into a garage also.

Fay N. Fuller, formerly of Elkhorn, Wis., has resigned as assistant manager of the Ford Motor Co.'s branch in Fargo, N. D., and will enter the trade for himself in Williston, in the same State; he will trade as the Williston Motor Co. and will distribute Fords.

Charles Burd, of Waterloo, Ia., has leased the garage and salesrooms formerly occupied by the Iowa Auto Co. and will remove his sales business to that location; his former quarters will be retained as a garage and service statiton. Burd stocks Empire and Cole cars.

The Bryant Motor Car Co., of Waterloo, Ia., has purchased a site on 5th street, between Washington and South streets and will erect a two-story garage, 50 x 120 feet; the company stocks Chalmers cars. Frank Bryant, the proprietor, formed the company four years ago.

J. F. ("Jack") Kelly and R. G. Melcher, both well known in the trade in Chicago, have formed the National Auto Maintenance Co. They have located at 2511-19 South State street and their business will consist of keeping individual owners' cars in repair for a stipulated sum per year.

Bowman & Libby, Inc., of Minneapolis, have been made distributers in a large territory for Marion cars; the company also handles Overlands and has been made distributer of Garford cars and trucks and Willys utility wagons as well in the same field. The company claims to be the second largest Overland distributer in the world.

Frank D. Stoop, of 127 1st avenue East, Kalispell, Mont., has purchased the Kalispell Auto Co.'s garage, 50 x 140 feet; he plans to add 25 feet on one side for salesrooms and additional storage space, and will install a vulcanizing plant, air compressing system, welding outfit and other equipment. He handles Studebakers and Hudsons.

Capt. J. Mott Williams, of St. Petersburg, Fla., has taken possession of a two-story garage and machine-shop recently erected at 3rd avenue and 3rd street South; it is styled Williams Garage. It cost $30,000 and affords 12,000 square feet of floor space. A seven-room apartment, occupying part of the second floor, is tenanted by Williams and his family.

The Detroiter Motor Sales Co., Inc., has

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been formed in New York City to act as wholesale distributer of Briggs-Detroiters in New Jersey, New England and Eastern New York State; Julius Lichtenstein, who is connected with other metropolitan motor car enterprises, heads the new business. K. C. Pardee, Inc., continues as metropolitan retailer of Briggs-Detroiters.

Arthur Routh, of the Routh Packing Co., and Arthur Grund, of the Auto Repair Shop, have formed the Oakland Sales Co. in Galesburg, Ill. They have located at 126 6th street, and besides handling Oaklands will operate a day and night livery and a repair shop.

S. B. Ebersol and Ray Hinch, of Marseilles, Ill., have formed a company which has taken over the Marseilles Auto & Supply Co. and the Ebersol Motor Car Co. The new company, which will use the Marseilles company name, is erecting a new building, 60 x 100 feet, with a basement 24 x 60 feet, on Young street. The structure will cost $5,000. The company will handle several lines of cars.

Edward McK. Hunt, New Jersey distributer of Stewart trucks, and the Ingle Motors Co., New Jersey distributer of Brown commercial cars, have merged and adopted the style Ingle-Hunt Motors Co. The new company has secured a garage, salesrooms and service station at 16-18 Shipman street, Newark, and besides handling the two lines of trucks will specialize in used trucks of from 1,000 to 3,000 pounds capacity.

The garage, repair and supply departments of the Boone Auto Co., of Boone, Ia., have been taken over by J. W. Erickson, of Boone, and A. G. Olson, formerly of Boxholm, in the same State; they will retain a part of the Boone company's building and will operate under the style Erickson Auto Supply Co. The Boone company retains its automobile sales business. Erickson previously was an employe of the Boone company.

George W. Hawkins, widely known in the trade in and about Houston, Tex., has sold his interest in the Hawkins-Halff Co., of 1120 Main street, to his partner, G. A. C. Halff; the company name may be changed to Halff Co. Hawkins has not announced his plans for the future. Halff will assume active management of the company, control of which carries a majority interest in the Thompson-Halff Co., of Waco, the Alamo Sales Co., of San Antonio, and the Halff Co., of Dallas.

The Electric Vehicle Service Co., with $5,000 capital, has been organized in Saginaw, Mich., to operate an electric garage; a building will be erected. H. H. Meyers, formerly of Toledo, O., will be superintendent. The officers and directors are: President, Allan Jackson; vice-president, J. P. Beck; secretary and treasurer, J. H. Wagner; directors, the officers and Theodore Huss and W. O. Sustins. Besides these, the organizers include S. J. Bolton, John A. Cleveland, E. R. Griggs, J. A. Weigel, and E. T. Eastman.

Recent Losses by Fire.

Greensboro, N. C.—American Motor Car Co., garage, tires, accessories and ten cars destroyed. Loss, $10,000.

Virginia, Minn.—H. Shannon; garage and two cars destroyed. Loss, $5,000.

San Diego, Cal.—Savage Tire Co.; plant damaged. Loss not stated.

Holliday, Utah—Cheeseman Garage; destroyed. Loss, $20,000.

Moto Bloc Sues Mt. Vernon Service Man.

For supplies furnished to Henry C. Fordham, who operates in Mt. Vernon, N. Y., as the Westchester Motor Service Co., the Moto Bloc Import Co., of New York City, has filed suit in the Supreme Court for New York county; it claims Fordham ran up a bill of $325.15 between March 3 and August 28, 1913, and has paid but $163, leaving a balance of $162.15.

Smithtown Garageman Called to Court.

The Century Tire Co. this week filed suit in the Supreme Court for New York county against Edward C. Baxter and Albert R. Meade, who trade in Smithtown, N. Y., as the Smithtown Auto Co. The suit is for $528.85 for goods supplied between September 1, 1912, and June 10, 1913.

Rubber Importer Given $2,800 Verdict.

De Lagotellerie, a crude rubber importing concern, was given a verdict of $2,836.23 this week in the Supreme Court for New York county against the Automobile Tire Co. The amount was asked upon a note which was given De Lagotellerie by the tire company and not paid at maturity.

Complaining Buyer Gets Six Cents.

Because he claimed an Everitt "48" which he bought early in 1912 from the Tanner Motor Car Co., of Brooklyn, N. Y., was not worth the $1,800 he paid for it, Isaac J. Cohn was given a verdict of six cents this week in the Supreme Court for New York county; he asked $1,000.

Regrets He Paid "Cable Tire's" Rent.

Timothy F. Scannell apparently thought so well of the Cable Pneumatic Tire Co., of New York City, that he paid its office rent for two years at 102 West 42d street; the amount was $1,000 and the tenancy ran from August 1, 1909, to August 1, 1911. This week he took judgment for $1,087.21 in the New York City Court, claiming the money never was repaid.

Ajax-Grieb Wants Albany Man to Pay.

The Ajax-Grieb Rubber Co., of New York City, brought suit this week in the Supreme Court for New York county against the Consalus Auto Co., of Albany, N. Y., for $306.90, alleged to be the balance due on a bill of goods supplied between January 1 and March 30, 1913. Victor E. Consalus is the company's president.

Judgment the Result of a Truck Sale.

Because Otto B. Moody and George H. Hinton, who operate the New York & Yonkers Auto Dispatch, failed to pay for a Garford truck, judgment was taken against them this week in the Supreme Court for New York county by the R. & L. Co., Garford dealer in New York City; the amount is $2,200.

Firestone to Establish Branch in Iowa.

To facilitate the distribution of Firestone tires in that part of the West, the Firestone Tire & Rubber Co. is preparing to establish a branch and service station in Des Moines, Ia. As yet, no suitable building has been found, and if further efforts prove unavailing the Firestone company will erect its own branch.

Asks Herkimer Garageman to Settle.

The Indian Refining Co. this week filed suit in the Supreme Court for New York county against George T. Lewis and John T. Murphy, who operate in Herkimer, N. Y., as the L. & M. Garage; the claim is for a balance of $274.96 on goods supplied between May 8 and July 19, 1913.

Humphrey, of Hupp, Gets New Title.

S. H. Humphrey, factory manager of the Hupp Motor Car Co., of Detroit, has been elevated to the extent of having the title "manufacturing manager" bestowed upon him. The new title carries with it jurisdiction over the Hupp factories in both Detroit and Canada.

U-S-L Combines Sales and Service.

The United States Light & Heating Co. has removed its New England branch from 84 State street to 25 Irvington street, Boston. The effect of the removal is to bring the U-S-L service station and sales office under one roof.

Fugitive Manager Returned to Chicago.

Arthur V. Webb, formerly manager of the American Auto Supply Co., of Chicago, who was arrested in England on a charge of embezzlement, has been returned to Chicago to stand trial; it is charged that he decamped with $2,800.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
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WHY NOT AN ELECTRIC HEATER?

Strangely enough, inventors and others have paid remarkably little attention to the possibility of producing some sort of small electric heater suitable for use in the tonneau of a car—a device that can be placed in the open market and purchased at a reasonable price by any one seeking comfort during the winter months.

Electric devices to keep the driver's hands warm are comparatively common; which makes plain the feasibility of developing an electric heater for other purposes. That there is a demand for such a device is emphasized by a prominent New York accessory dealer, who declares that he has had many inquiries for one and would have not the slightest difficulty in disposing of a large number of them provided they were efficient and not too expensive.

The car owner really wants something of the kind. Undoubtedly the idealistic simplicity of the electric heater, which can be put under any number of layers of robes and which cannot cause a fire, has much to do with the demand for it. And now that electric lighting and engine starting equipment is standard on so many cars the need of the electric heater, long ago felt in a lesser degree, is real and urgent.

Most lighting systems provide plenty of current for operating an electric heater, particularly where the car is driven not very much at night. A good many of them, in fact, provide a considerable excess of current that ordinarily goes to waste. Why not put it to some good purpose?

ABOUT PUTTING MOTORISTS IN JAIL.

It begins to look as if the Hon. Mitchell May, Secretary of New York State, who has charge of its automobile bureau, never, never will be happy until he puts a few motorists in jail.

He continues to keep himself in the limelight by reiterating the necessity for that sort of thing, and none will disagree with him that there are motorists who deserve cold storage behind iron bars. But just why the Hon. Mr. May cannot visit the punishment upon them instead of constantly talking about it is one of the things that is difficult to find out.

There certainly are laws enough on the books to achieve the result, and perhaps if Mr. May talked less and brought the weight of his influence to bear on the courts it might prove more effective and keep more of breath in his body.

His chatter again suggests the question: How did Secretaries of State manage to keep busy—regardless of keeping in the spot lights—before automobile bureaus were invented and attached to their offices?

MINORITY STOCKHOLDERS NOT UNBLEST.

Minority stockholders on occasion can become very contrary "critters," as several of the larger corporations identified with the automobile industry, among others, recently have borne witness. Minorities usually amount to little more than unpleasant breaths, but for all of that they serve good purposes.

Big men dominating big corporations are too prone to believe themselves all powerful and to conduct affairs accordingly. It is not meant to say that they conduct them unfairly or wrongly, but the great power which reposes in them sometimes is abused, and even more often leads to more or less reckless extravagances of one sort or another. It is then that the objecting or inquisitive minority stockholder; despite his apparent cantankerousness, proves a blessing in disguise. He assists in bringing the "big fellows" back to earth and causes them to be more circumspect in spite of themselves.

REMARKABLE STRENGTH OF PARTS TRADE.

Quite the most remarkable feature of the present situation in the automobile industry is the wonderful strength exhibited by the parts and accessory trade. Despite the long succession of embarrassments and reorganizations which have overtaken car and truck manufacturers, the parts makers have stood almost as solid as a stone wall.

Whether it is due wholly to the ampler financial resources, smaller investments, or to the diversity of their products and the greater number of their customers cannot be said, but whatever it may be, the fact remains. In the face of distress which has given rise to no little pessimism, the health of the parts and accessory trade deserves remark and constitutes an inspiring example.

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RAINBOW OF PROMISE SEEN IN PRICE-CUTTING CLOUDS

Manufacturers to Work for Restoraton of Right to Fix Resale Figures —Redfield Buoys Hopes of Foes of "Price Slashing."

The United States Supreme Court in its ruling in the Sanatogen case held that the manufacturer has not the power to fix the resale price of his goods, but indications are not lacking that the right to tell the retailer what he shall charge for the manufacturer's goods may be restored to the latter in the not distant future. As it stands now, the law forbids price maintenance, but agitation for a different law is under way and may bring results.

One of the latest and most favorable indications in this direction comes from no less a personage than Secretary Redfield of the Department of Commerce and Labor, who in an address last week before the Board of Commerce of Lansing, Mich., stated that if funds were available the department would in the coming year institute an investigation into the price-fixing situation with the object of ascertaining the advisability of working for a law permitting this practice.

"The decision of the Supreme Court holding it to be unlawful for manufacturers to fix retail prices settles the present law, but the wisdom or unwisdom of the law and economic profit or loss by the practice are not yet settled," said Secretary Redfield. "There are men who are sincere foes of monopoly and who incline to the belief that, under economic laws, which are greater than statutes, the broad prohibition of the right to fix retail prices by manufacturers tends to create monopoly, instead of toward relief from monopoly.

"There is no thought of questioning the decision. It is the law of the land, and as such it is bound in letter and spirit to be accepted and obeyed. For the guidance, however, of future legeislation on this important subject it is desirable that the economic question be worked out."

The merchandizing development may constitute one of the chief points in discussions before the next Congress upon this phase of business, and data bearing on the situation will be presented by the National Fair Competition League which had its birth immediately following the Sanatogen decision. This league maintains an office in New York and is working in several different lines toward the restoration of fixed resale prices.

How legalized price-cutting works out is well explained by an attorney who has been engaged for some time in combatting price cutting on a certain manufacturer's wares. "Fixed resale prices are the little business man's only salvation," he asserted. "It is the only way in which the big chains of retailing stores can be prevented from crushing out the 'little fellows' and the small business men are coming to see it more and more.

"The corporation which operates a big chain of stores can sell goods at a smaller margin of profit than can the 'little man' and if the 'little man' attempts to meet their price they can cut below cost in certain localities, still do well on their profits in other cities and slowly but surely put the small, independent store out of business. But if prices are fixed by the manufacturer and the retailer is compelled to maintain these prices, the chain stores cannot sell for a cent less than can the small, independent store and the small store has an even chance for existence. Price-cutting does not prevent monopoly; it creates monopoly."

Charges Mismanagement in U. S. L.

If they are not coming into their own, the minority stockholders of the big corporations are certainly making themselves heard nowadays. One of them, George W. Baxter, of Knoxville, Tenn., has issued a letter to other holders of stock in the United States Lighting & Heating Co., in which he alleges mismanagement.

"I am not satisfied with the policy pursued by the present management in failing to make any statement to stockholders or to give them any information except of the most general character," says Baxter. "Its securities are selling at the lowest prices in the history of the company; its indebtedness is as large or larger than ever before, and, as you know, the payment of dividends on the preferred shares was suspended last July. I was recently informed by the treasurer of the company that the net earnings for July were $8,000 and for August $6,000, which, I submit, is a pitiable showing for a company of this magnitude and doing the volume of business that it does."

An officer of the company said yesterday that owing to the absence of President Smith in Europe no statement in reply could be made yet. It was said that, while the surplus for July and August was no more than $14,000, it stood in contrast with a deficit of $5.040 in the same months last year.

Indianapolis Branch for Howe Rubber.

The Howe Rubber Co., of New Brunswick, N. J., which manufactures the Clover Leaf inner tube, has opened a branch in Indianapolis. It is in charge of E. L. Welsh.



*Indicates Sanction by A. A. A.

Oct. 18-Nov. 2, Dallas, Tex.—Dallas Automobile Dealers' Association's automobile show.

Nov. 1, Hot Springs, Ark.—Track racemeet under auspices of J. A. Sloan.

Nov. 3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.*

Nov. 4, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.*

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of Maricopa Automobile Club.*

Nov. 7-8, Philadelphia, Pa.—Quaker City Motor Club's economy run.

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 8-15, Atlanta, Ga.—Atlanta Automobile and Accessory Association's fourth annual automobile show in the Auditorium.

Nov. 9 and 12, Shreveport, La.—Track racemeets under auspices of J. A. Sloan.*

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 12-15, Bridgeport, Conn.—Second annual automobile show in State Armory.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

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FIRST BIG DALLAS SHOW IN ILLUMINATED FOREST

Sixty-five Different Makes of Cars Displayed by Thirty-eight Dealers on State Fair Grounds—Exhibitors and Their Wares.

For the first time, the city of Dallas, which as every one knows is in the State of Texas, has a real automobile show all its own; it has had small shows before—sporadic attempts of a few dealers to emulate the National events—but this is the first real show, promoted by Dallas dealers in a body and housed all under one roof. The Dallas Automobile Dealers' Association is responsible for it, and it will hold the boards for a record run; it was opened on October 18th, in conjunction with the Dallas State Fair, and will not close its doors until November 2nd.

In point of number and variety of exhibits, the Dallas show is second to few; some 65 different makes of cars and commercial vehicles are displayed by 38 dealers; altogether there are about 156 vehicles on exhibition and they include everything from the poor man's runabout, otherwise known as the cyclecar, to the heaviest and most expensive limousines. The cars are displayed under a flat ceiling and between mural decorations depicting West Texas scenes. Otherwise, the decorations consist of rows of birch trees with hundreds of miniature incandescents cleverly let into the bark to give the effect of an illuminated forest. Strings of brilliant tungstens, dependent from the ceiling, supplement the softer glow of the half-concealed miniatures. The complete list of exhibitors and the wares they display is as follows:

Crow Motor Co., Crow; The Halff Co., Rauch & Lang electrics, Paige, Pierce-Arrow, Chalmers, Federal, Mack and Saurer trucks; Kissel Kar Co., Kissel Kars; Michigan Motor Car Co., Michigan and National; Davis-Turney Auto Co., Haynes and Stevens-Duryea; Inter-State Auto Co., Inter-State; Metz Co., Metz; Pathfinder Motor Car Co., Pathfinder and King; Hudson-Reo M. C. Sales Co., Hudson and Reo; Henderson Motor Car Co., Henderson; Franklin Motor Car Co., Franklin; Premier Motor Car Co., Premier; Olds Motor Works, Oldsmobile.

Studebaker Corp., Studebaker; Southwestern Motor Sales Co., Chevrolet, Staver, Empire and Chase trucks; White Motor Car Co., White cars; William T. Fulton, Wichita trucks; Lozier Motor Car Co., Lozier; Locomobile Co. of America, Locomobile; Tri-State Sales Co., Marathon, and Imp cyclecar; Jackson Motor Car Co., Jackson; Cameron Auto Co., Hupmobile and Oakland.

Overland Auto Co., Overland, Garford, Ohio electric and Willys-Utility and Garford trucks; Chandler Motor Car Co., Chandler; Buick Automobile Co., Buick; Munger Auto Co., Cadillac; Krit Car Co., Krit; Avery Co., Glide; Cole Motor Co., Cole; Texas Motor Car & Truck Co., Partin-Palmer and Commerce trucks; Westcott Motor Car Co., Westcott; Overstreet-Loveless Co., Detroiter.

Ford Motor Co., Ford; Padgett Bros., Velie; Maxwell Motor Sales Corp., Maxwell; Sacksteder-Potter Co., Marion; Mitchell Motor Car Co., Mitchell; Harrison Vernon Motor Car Co., Packard; Anderson Electric Co., Detroit electrics, Wilcox trucks.

Receiver for a Used Car Dealer.

Upon application of N. Pohly Myers, a receiver was appointed this week in the New York City Court for the Cooperative Used Car Co., which formerly did business at 250 West 54th street and later at 1700 Broadway, which location is now occupied by the Universal Auto Sales Co. Myers secured a judgment for $319.66 October 7 in the 5th District of the Municipal Court and preliminary to the appointment of the receiver the Cooperative's president, Louis R. Ezchel, was examined in supplementary proceedings.

Ezchel testified that the company was organized in January of this year by himself, Joseph B. Bauer and John C. Curtis with an authorized capitalization of $3,000 to deal in new and used cars; for the stock, all of which was issued, $1,000 in real money was paid in and the remaining payment consisted of the good-will of the incorporators. Ezchel said his experience of ten years in the automobile trade constituted valuable good-will, as did the four years' experience of Bauer in the tire trade.

But when it came to finding something which could satisfy Myers's judgment the search was not very successful. The company has not been in business for some time and has a bank account of only about $1.80. Several other judgments have been taken against it. Ezchel is an officer of the Universal Auto Sales Co., but he denies that there is any connection between the Universal and the Cooperative companies.

Purchasers May Assemble Own Cyclecars.

Chester S. Ricker, the consulting engineer who until recently was identified with the Henderson Motor Car Co., of Indianapolis, is said to be organizing a company to supply cyclecars in knocked down state. It is his idea that there are many purchasers who prefer to do the assembling of their own cars.

TRUCK FREIGHT RATES TO CALIFORNIA REDUCED 15%

Fifty Cents Less on Hundred Pounds but Light Wagons Are Not Included—New Schedules Effective December 1.

Lower freight rates on heavy commercial vehicles between eastern points and California terminals will become effective December 1, according to an adjustment secured by the General Traffic Department of the Automobile Chamber of Commerce; the reductions are 50 cents a hundred pounds in each case and amount to from 15 to 16⅔ per cent.

On pleasure vehicles and light delivery wagons the old rates remain in effect, the new rates applying to trucks (not including delivery wagons with closed tops), chassis for such vehicles, tractors and extra parts (finished or unfinished) but not including windshields, lamps, searchlights, speedometers, cyclometers and horns. The old rates were: 36-foot car, minimum 10,000 pounds; 40-foot car, minimum 10,000 pounds; 50-foot car, minimum 12,000 pounds—Group A, $3.30; B, $3.20; C., $3.10; D, E, F, G, H and J, $3. The new rates are: 36-foot car, minimum 12,500 pounds; 40-foot car, minimum, 12,500 pounds; 50-foot car, minimum 15,000 pounds—Group A, $2.80; B, $2.70; C, $2.60; D. E. F. G. H and J, $2.50.

In no case shall the charges for a carload shipment of trucks handled under these rates exceed the amount charged for a carload shipment of pleasure cars of like weight. The date when the reduced rates shall become effective to Northern Pacific Coast points has not been fixed.

Limits Cars to be Imported Under Bond.

Regulations governing the free entry for six months under bond of various articles of foreign manufacture have been issued by Secretary of the Treasury McAdoo; section 4 of paragraph 1 limits the privilege of free entry under bond of automobiles to such as are brought to the United States by non-residents for touring purposes or for the purpose of taking part in races or other specific contests.

Garage Owners to Test "Blue Law."

Stetson Bros., who operate a garage in Neponset, Ill., do not take kindly to a village ordinance which prohibits a garage being kept open on Sunday; they were arrested when they refused to comply with the law. When arraigned they waived examination and will carry the case to a higher court.

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THE COST OF CARELESSNESS

How Broken Bolt Thrown on Garage Floor Cost $10.40 and Disgusted a Customer—Plan Installed to Prevent Repetitions.

Who would dream that a broken half-inch bolt, thrown on the garage floor by a careless workman, would cost the garage proprietors ten dollars and forty cents? It probably cost them a good deal more than that, but they are absolutely sure the amount named was the minimum.

It happened this way: First, the workman, after breaking the bolt in an attempt to get it out, threw it out on the floor in the middle of the garage. There it lay. Everybody passed it. There were lots of others like it. Cotter pins and broken lock nut washers and lots of hard metal odds and ends kept it company. The boys in the shop did not care what risk the firm's customers ran by driving into the shop. The proprietors were far too busy walking back and forth to the 'phone, chatting with customers and superintending the work to notice what was on the floor.

Bolt—Puncture—and More Trouble.

Mr. Green came after his car. It was out in the alley. To finish the job it was necessary to back it in to the shop. While looking it over Mr. Green discovered the half-inch bolt securely embedded in the rear tire. It had obviously just made its way through. The attention of the proprietor was called to the matter. He secured pliers and pulled out the bolt. The tire went flat. The customer, looking around, saw several other bolts like it on the floor—and naturally and correctly concluded that the garage was responsible for it. The proprietor could not but agree with the justice of his remarks and proceeded to change the tire. It seemed a very simple matter—just a puncture. It would be fixed in a minute.

But it wasn't. The tire was taken off and the tube removed for mending. It was put in the electric vulcanizer but the boy was not an expert at vulcanizing. He left the job for several minutes and when he came back the heat had burned a hole right through the tire.

It was decided to send for an extra tire of the customer's several blocks away. There was no pick-up wagon available, so a boy was sent. It took about 45 minutes for the boy to get the tire. Then it took about half an hour to place the tube in the new casing and get it on to the demountable rim. After this it had to be pumped up by hand and placed on the car. Altogether, it consumed about two hours' time of boy and assistant.

Itemizing and Repairing the Damage.

On top of it all, the shoe or casing of the tire injured had to be sent away for vulcanizing and the estimated cost was $3.25. When the dealer got to figuring, the trifling bolt was magnified into the following:

One new tube, 34 x 4	$5.95
Two hours time	1.20
Vulcanizing shoe	3.25
Total	$10.40

Any active man in his employ could have swept the floor and got it free from scraps in a very short time. But there was no regular plan for caring for the floors. The cost of not caring for them had never struck the proprietor so forcibly before. Then and there he adopted a system of supplying every workman with a tin pail for bolts and nuts. Then all the employes were called together, a brief sketch of the incident and its cost was given and a general order issued that will probably mean treedom from such incidents in the future.

Only the cost to the garageman in dollars and cents has been mentioned. Not a word has been said about the feelings of the customer waiting for his car. He was so disgusted with the shop and its careless appearance that he was afraid of the job—suspicious of the charges—and glad to get away from the place. In his mind he registered a vow never to come back.

No comment is necessary.

PROVING IT POSSIBLE TO SELL CARS EVEN WHEN RAIN FALLS

It was a miserable, wet day, the third in a series of miserable, rainy days. The salesman walked to the window and looked out with eyes keen to detect the slightest indication of a change. But, if anything, the weather seemed to be growing worse. Half-heartedly he picked up his prospect cards and ran through them.

"By George!" he ejaculated. "There's Dickinson. I'd almost forgotten him. He ought to be ready now. I'll call him up and perhaps he'll talk to me this morning."

It did not take long to get Dickinson on the 'phone. "I was just thinking of you and wondering why you had not been around; am just about ready to buy that car," said Dickinson.

"If that's the case, I will come right down and see you," announced the salesman.

Just one hour later he had the signed order and a substantial deposit. And that same afternoon, in spite of the rain, this salesman sold two other cars. "It never rains but it pours," he remarked to himself as he slipped the orders under the roller top of the manager's desk that evening.

Method Essential in Working Field.

How do you know that you are working your territory properly? What method have you for finding out? How many cars have you sold in proportion to the population? Is it one in one thousand, or in every five hundred, or what? What percentage of increase do you show over the business of last year? Get down to figures—and be sure your figures are right.

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AWAKE-NDISING WORLD

SALES-MAKING EARNESTNESS

Enthusiasm Begets Earnestness and Latter Means Sales—How a Man Who Radiated His Belief in His Goods Made 500% Gain.

Are you really in earnest?

The answer to that question is of tremendous moment to a salesman. If he is not sincerely and enthusiastically in earnest about his business he might just as well quit.

There is a magic fire to earnestness that kindles warmth in the buyer. It makes him stop and listen. He says to himself, "Here is a man with a message; I must hear it." He gives close attention; he believes, because the earnestness of the salesman convinces him, in spite of himself.

Went Out to See the Field Himself.

Being in earnest, a man may make two sales where he made one before. He simply cannot let things go in an ordinary sort of way. His enthusiasm is too keen, the opportunity for those he is selling is too large; he must tell them about it.

A fountain pen manufacturer, who is nothing if not in earnest, decided to take to the road himself and face just what his salesmen were facing. A certain territory happened to be vacant; he went in and worked with all the earnestness at his command. His selling style was crude, according to the "dope," but he was terribly in earnest. He got attention always. And he got orders. In one Western city of importance he opened up 150 **new** accounts in a season. The best record before was 25.

Asked why he was so successful, he replied: "I don't know, unless it is I am thoroughly in earnest—and I always get attention." Watch him make a sale and you realize what a force that earnestness is. He makes you fairly jump with his earnest enthusiasm. And it isn't merely the words, but the words and the manner and the action of his arms, legs and head. They all work—and work for the order.

LETTING THE PUBLIC LIGHT THE SALESROOM AFTER DARK

It is not necessary to find a connection between candy and automobiles—even if some cars are "the candy"—to enable the automobile or accessory dealer to make application of an advertising scheme which has proved an attraction in the store of a confectioner in Minnesota; it is a part of store advertising which will fit more than one trade.

The confectioner hooked his store lights up with a button switch which he located outside the store door beneath the sign, "Push This Button and See Our Store." He generally closed up about 6 o'clock, and it was during the evening hours that the scheme got in its good work. Passersby who saw the sign pushed the button, of course, and immediately the interior of the store was brilliantly illuminated. When the button was released the lights went out. The scheme proved so great an attraction that those who had tried it brought their friends to see it.

How the Device Might be Applied.

In an automobile salesroom, for instance—should the dealer care to leave his displayed cars in darkness except when lighted by the button—the display could be made striking and effective. If the cars were arranged to advantage with price signs in plain view where the whole would best strike the eye of the man at the button, it is not improbable that the exhibit would be noticed by fully as many people as the salesroom in which the lights burned steadily the whole evening. The sign above the button would be many times more serviceable were it a transparency backed up by a small light.

To go still more deeply into the scheme in its application, especially to an accessory store, several buttons might be arranged along the bottom of the window, each button connected with a ground glass sign or transparency of some sort which would carry a message to the man who pushed the button. If ground glass were used with the advertising painted or chalked on the back the copy could be changed daily with little effort or expense.

WHY IT IS WISE TO ITEMIZE LABOR DONE IN REPAIR WORK

In making a repair bill be sure to itemize the work done. It may save a lot of argument and some expense in the future.

Following a custom that obtains widely, one garageman billed a customer for various bits of work done under the item "30 hours labor, $18," and entered the item on his books in the same way. Two months later the customer came back and demanded that the work of taking up the main bearings and putting in new wrist pins be done over again without charge.

He claimed that this was the work for which he had paid 60 days before. The repairman did not remember the details of the work then done, and his books did not give any clue. While morally certain that he had never done this work, nevertheless he felt compelled to take the customer's word for it as he had nothing to show what he had done.

His style of bookkeeping underwent an immediate change. Time cards and books alike now show exactly what is done and what it costs.

Success in the Adoption of Ideas.

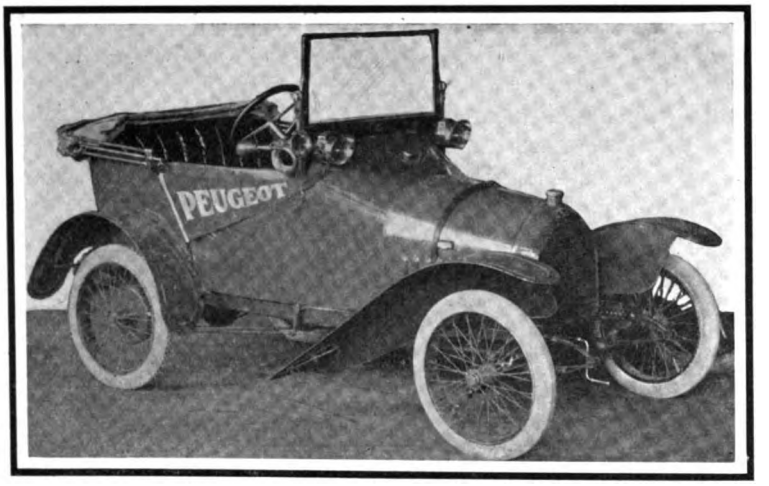
Some men turn down good suggestions simply because they did not think of them first; others are quick to grasp any suggestion that looks like better business and try it out. It is not hard to predict which will make the greatest success.

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"BABY" PEUGEOT CYCLECAR IS BIG CAR IN MINIATURE

Unusual Transmission Has Two Shafts and Two Speeds, Both on Direct Drive—High-Speed 4-Cylinder Motor Employed.

The development of the cyclecar in that part of the world usually known by the much-embracing term "abroad" has preceded and exceeded its development in the United States very considerably; and for this, if for no other reason, the foreign type of cyclecar is of no little interest to those who see a great future for the narrow-gauge midgets. And of the various types of diminutive machines none, perhaps, is more interesting than the "Baby" Peugeot. Essentially a big car on a small scale, the little French machine has done much in emulation of the successes of its big brothers; on the Le Mans Circuit, for instance, Baby Peugeots, in competition with other cyclecars, took second, fourth and fifth places, the best speed being an average of 46 miles an hour for the total distance of 168 miles, and first and second places were taken in the Mt. Ventouz hill climb. The machine is imported by the Peugeot Auto Import Co. of New York.



SIDE VIEW OF "BEBE" PEUGEOT WHICH HAS TWO DIRECT DRIVES

The general appearance of the car is so well shown in the accompanying illustration that comment hardly is necessary. It may be said, however, that there is more room for two passengers than appearances indicate, the deep cowl enclosing a surprising extent of leg-room. Being a real car in miniature, the "Baby" is shaft driven; it is peculiar, however, in that it has two shafts, enclosed in a single torque tube, each driving through its own set of bevel gears on the full-floating rear axle. Thus the machine has two forward speeds and each is a direct drive; control of the speeds is effected by a Bowden wire connection with a lever on the right side of the body, inside; the effect is to connect the desired drive shaft with the clutch shaft. The clutch is an inverted cone with a leather facing.

The little four-cylinder motor is rated at 6-10 horsepower, and its bore and stroke of 55 x 90 mm.—approximately 2 5/32 x 3 17/32 inches—indicate that it must turn up a lot of revolutions in a minute to develop that horsepower. In other words, it is a high-speed engine. The cylinders are cast in a single block and are of the T-head type; all the valve lifters, stems and springs are enclosed in approved fashion. A Bosch high-tension magneto is run from the same shaft that drives the water pump. Lubrication is by drip feed from a tank placed in the cowl, and an interconnection between magneto and oil controls shuts off the oil when the motor is stopped so that there will be no drip when it is not needed. The carburetter is a Zenith.

Regular car practice is followed in the construction of the chassis frame, which is of channel section pressed steel, narrowed in front. The front springs are semi-elliptics, while in the rear the springs are inverted quarter-elliptic, the ends of the springs beings being clipped to the axle casing. Internal expanding brakes in drums on the rear wheels are operated by both hand lever and pedal. The wire wheels, which are not detachable, are fitted with tires 550 x 65 mm., or approximately 21½ x 2½ inches. The equipment included in the price—which is $975—comprises top, windshield, shock absorbers, acetylene lamps and generator, horn and tools.

TIRE MAN SUGGESTS THAT LETTERS BE STANDARDIZED

Says Business Correspondence Could Be Made More Efficient—Delays Which Might Be Avoided by His Plan.

Regardless of what Noah Webster has to say about it, the word "Standardization," so far as the automobile trade is concerned, has been made to mean "being brought to the standard of greatest efficiency or value," so that when C. R. Johnson, of the Efficiency and Welfare Department of the Goodyear Tire & Rubber Co., talks of "standardizing business letters," it is not difficult to surmise what he means. Johnson suggests one principal change in the belief that it would increase the efficiency of the letter and lessen the work.

"The suggestion has come to the writer," he said, "that the National Association of Manufacturers might be able to assist materially in standardizing letter writing methods in business correspondence throughout the country. We find, by our experience, that many letters come addressed to this company with no notation which will assist our mailing department in locating the party for whom intended. The result is the mail becomes delayed to a great extent, and very often it is located at its proper place only after consultation with our files. It has been suggested that an appeal might be made to manufacturers to standardize the method of addressing correspondence as follows:

"The envelope to have firm address only. The salutation to consist of firm address as displayed on envelope, plus the 'Attention of' a certain party or department.

"The temporary absence of an individual representative of a firm, to whom a letter has been addressed, often causes a vexatious delay in attending to the correspondence, whereas every good business organization is equipped to give prompt attention to all communications if they be not held up by the appearance of being personal letters which must await the return of the particular persons to whom they are directed. So great a nuisance has this become that many firms feel obliged to print on their letterheads the instruction: 'Address all communications to the company, and not to individuals.'"

Tie-Rod that Should be Kept Secure.

In a car having a tie-rod extending from the radiator to the dashboard, care should be taken that the rod is fast at both ends; otherwise there may be trouble less easily remedied than the looseness of the rod.

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WHY IT'S FOOLISH TO BITE A GOOD CUSTOMER

He Doesn't Enjoy It and It Doesn't Help Make Sales, Says Reilly, Who Is Attacked by an "Ear-Chewing" Insurance Man—Unable to Understand the Methods of Some Men Who Persist in Appearing "Intense"

"Insurance. I can tell by the looks of him," guessed the Sales Manager, who walked across the salesroom floor and into Reilly's office at the same time that a hawk-like and cadaverous looking individual hurried out.

"Insurance is right," replied Reilly. "That insurance agent just set me wondering again, and I'm glad you're so reassuring; although I don't know whether you're on the level or not."

"I suppose this is only your way of getting around to tell me what ails him."

The Sales Manager threw his fall over-



"HE CRAWLS RIGHT UP INTO MY FACE WHEN HE TALKS TO ME"

Both men turned to watch the furtive little man whose actions, combined with a walk that seemed to be made up of a succession of darts and spurts, indicated that somewhere back in some misty age when the Big Ones used to eat up the Little Ones one of his ancestors might have been a water bug. As a succession of unusually jerky jerks jerked him around a corner and out of sight Reilly turned to the Sales Manager.

"Jim," he asked, "do I look funny?"

"No more than usual."

"Or beautiful?"

"Not very."

"Do I seem hard of hearing?"

"What the——!"

"Does that guy look like a 'dip'?"

Sales Manager Demands Explanation.

"More or less, but what's the idea? What's happened now? What did he do to you?" shot back the Sales Manager like a rapid-fire gun before Reilly could get in another of his strange questions.

"I know I'm getting along in years—I'm thirty-eight now, in ten years more I'll be forty-eight and in ten years more I'll be an old man—and every now and then I am caused to wonder whether I'm getting so I look funny or can't hear," replied Reilly. "That insurance agent just set me wondering again, and I'm glad you're so reassuring; although I don't know whether you're on the level or not."

"I suppose this is only your way of getting around to tell me what ails him."

The Sales Manager threw his fall overcoat over the back of a chair and sat down beside Reilly's desk.

"He's an ear-chewer," said Reilly.

"A near-what?"

"An ear-chewer. You know; one of these gents who chews your ear and nearly kisses you."

"No; I don't know," asserted the Sales Manager. "Furthermore, I don't believe I care to know."

"I don't say I care to myself, but what can you do? I shooed him out as quickly as I could. I can't stand that kind."

"What's the matter with him?"

"The same thing that ails all the rest of them, I suppose," explained Reilly. "They think it's the way to be a convincing salesman. I never could see anything in it myself; it is so distasteful to me that I absolutely couldn't try it on anyone else."

"He——"

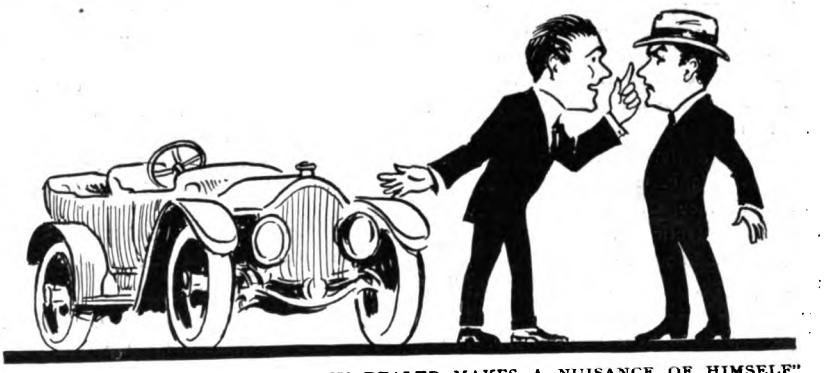
"He crawls right up into my face to talk to me and if his tongue gets twisted he gives an imitation of the atmosphere about the Maid of the Mist and——"

"You mean he's one of these short-arm salesmen, a kind of in-fighter," suggested the Sales Manager.

"The same thing," rejoined Reilly. "There are a few in all trades, I suppose; we have them in this trade. There's an accessory man who comes through here now and then whom I always try to dodge. They'll never succeed in selling me anything as long as he handles their line of stuff.

Accessory Salesman Who Is Unwelcome.

"Every time he comes in and succeeds in catching me here he pulls his chair right up close to me and begins to talk. He gets his face so close to mine that I can tell every last thing he had for breakfast and whether he forgot to clean his teeth that morning. Knowing the rate his whiskers grow, I can tell to a minute how long it is since he had his last shave, and I can even tell whether he's been smoking Sweet Caps or Royal Bengals."



"WHEN HE GETS A PROSPECT THIS DEALER MAKES A NUISANCE OF HIMSELF"

"You're becoming very proficient; a regular Sherlocko."

"More so than I care to be," snapped Reilly.

The telephone rang. As Reilly hung up

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he said, "There's another one. I wish they'd all use the telephone. A solicitor for newspaper used car advertising. Every time he comes in he makes me feel in peril for the end of my nose. He's a snappy talker and he gets so darned close I'm afraid of him."

"What good does it do?"

Over-Emphasis and Finger Shaking.

"What good? No good," replied Reilly. "There's a dealer here in town who has that same habit. When he gets a prospect on the salesroom floor this dealer makes a regular nuisance of himself, although he doesn't know it. He sticks himself right up close to the prospect and persists in hammering on every word as if emphasis made it impossible for the prospect to doubt the story. He uses so much emphasis that none of it amounts to anything. It's up with whatever treatment they get from a salesman; but there are prospects who are mighty particular and some of them are very fussy about the kind of salesmen they deal with.

"One day a man whom I had known fairly well for a long time walked in and said, 'Reilly, if you'll promise not to spit in my face or try to kiss me or bite my ear, maybe I'll buy a car of you.' I told him I would endeavor to respect his wishes, and before he left he told me he had been over to see my finger-shaking competitor. He said he went in and tried to find out something about the car and that the first thing he knew he thought he had stirred up some kind of a bees' nest, for the dealer got right up into the prospect's face and began his finger-shaking story.

"Finally the dealer wanted the prospect to go for a ride; the prospect didn't ob-



"I FIXED HIM. I PUSHED BACK. HE WAS SO FAR AWAY HE COULDN'T TALK"

like wearing a red necktie. If you wore a red tie someone would notice it, but if you wore a red tie and a red shirt and red clothes and red shoes and a red hat no one would so much as notice your tie.

"He likes to shake his finger, too. He crawls right up in the prospect's front yard, figuratively, and every time he brings out a sales point shakes his finger in the prospect's face. His theory is, I suppose, that those tactics are convincing. Some people, you know, seem to believe that if they get right up close to a man, talk strong and shake their finger at him they are bound to make an impression. Mostly amateurs do that, but now and then you will find an old-timer who hasn't been able to get over it. They evidently think it shows intensity of purpose, or earnestness or something like that."

"Does he sell any cars?"

"Yes," drawled Reilly, as he pulled out the bottom drawer of his desk for a foot rest, "he is a pretty good salesman even if he has that one bad habit. I don't know whether it loses him many sales, for many people seem to think they have to put ject particularly to this and, anyway, he thought it would so arrange things that the dealer couldn't get so close in his conversation. But the prospect was disappointed. As soon as they got out on the road the dealer persisted in leaning over and managed to stick just as close as he did in the salesroom. Finally, the prospect made an excuse and got away. He came over here then."

How the Sales Manager "Fixed" One.

"One of those salesmen came in to see me the other day," broke in the Sales Manager. "He had been in before and I made up my mind he was going to have trouble the next time he came. I fixed my desk and the chairs so he would have to take a chair on the opposite side of my flat-topped desk. He fell into the trap finely. As soon as he got in motion he leaned over the desk as far as he could—and then I fixed him."

"How?"

"Why, I just pushed back a little and leaned back in my chair, and it left Mr. Shortarm Infighter so far away he didn't know what to do. He was so far away he actually couldn't talk. I could see it bothered him. He was used to getting right up in a man's face and talking from that position, and when he found himself several feet away he got badly flustered. He floundered.

"But I honestly believe he didn't know why he couldn't talk so well," smiled the Sales Manager. "He looked puzzled as he went out the door; he seemed to be wondering away back in his brain as to why he had felt handicapped. But the sonofagun! I knew what ailed him. I'd like to tell him, too."

Finger Shaking an Attempt to Bully.

"I have often thought I would like to uncover the working of the mind of one of those salesmen and see just what he thought of himself and his methods of selling." Reilly delved into a drawer and unearthed a Missouri meerschaum which was but little colored. "They either don't stop to analyze themselves and their methods or they have a badly distorted vision in regard to salesmanship. This getting up into a man's face and shaking your finger at him is nothing more or less than an attempt to bully the man."

"Bully him!"

"Yes, bully him! There's no reason in the world why a salesman can't make his conversation just as effective from a distance of three or four feet as from a distance of a foot or six inches. I may not be exact as to distance, but my intentions are good. The man of any intelligence—and most men who buy cars have some intelligence—can comprehend a salesman's story just as well if he isn't too close. It also makes a much better impression, for the prospect is likely to acquire an unfavorable prejudice if he gets an idea that the salesman is trying to jam through a sale.

Reilly Angered by His Remembrances.

"Why, hang it, Jim! It isn't even gentlemanly! It's positively rude! It's disgusting! The more I think of that insurance salesman who just went out the madder I get. I could shoot an insurance man on sight, anyway, and when one tramples all over my face I'm sore."

Reilly had by this time rammed a load into his new corncob and he said "sore" to the crack of a match on the bottom of his chair. The Sales Manager watched with interest while Reilly puffed raucously and blew out the match.

Just then an air current wafted the pseudo-fragrance toward him.

"I would suggest, Reilly, that you light that stove the next time he comes. If he can stand that he's entitled to some business."

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MORE CAR FOR LESS MONEY IN LATEST EMPIRE MODEL

Fifty Dollars Off Price Despite Enlargement of Car and Addition of Equipment—Chassis Practically Unaltered.

Like so many other manufacturers who have found extensive alterations unnecessary to bring existing models up to the plane that will entitle them to the designation new series, the Empire Automobile Co., of Indianapolis, Ind., has contented itself with making only minor changes, the most important of which is a lengthening of the wheelbase to 110 inches, and with adding considerable equipment to its latest model, which bears the distinguishing number 31. The price of the single model that will be produced, however, has been lowered by $50, the touring model now listing at $900 "all on," as the British say.

In point of fact, the car on the whole is a considerably larger car than it has been in the past, despite its lowered price; and the length of the chassis is not the only place where the enlargement is visible. The body has been made roomier, which means that the seats have been widened, and doors, too, now are larger and are of the full U-shape that appears to be gaining in popularity. Quite as a matter of course, door hinges and latches have been concealed and the smooth exterior of the body is accentuated by the clear running boards and the redesigned fenders which hug the wheels a little more closely than in previous models. As in the past, the steering wheel remains at the right side, though the control levers now are in the center and are placed so close to the driver's seat that they offer no hindrance whatsoever to easy entrance and exit from either side. The gear shift lever, for instance, is of the cane handle type and its total movement has been reduced to the minimum.

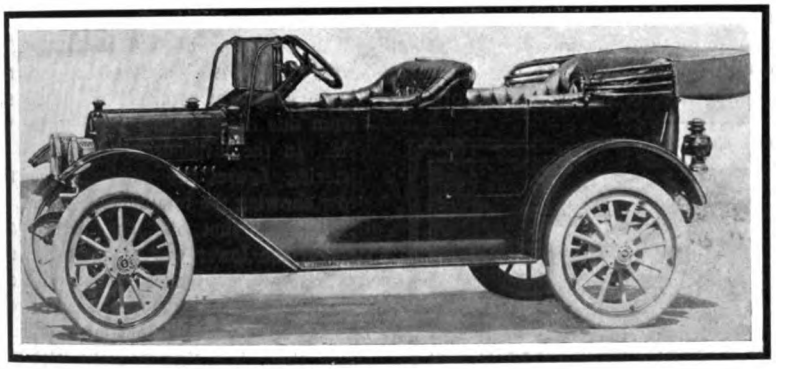
In the power plant and its allied parts, meaning the transmission elements in general, little room for improvement has been found. The motor itself remains of the L-head type with its cylinders cast in two blocks and supported at three points on the chassis frame. As heretofore, the bore and stroke are 3¾ and 4½ inches, respectively, giving a piston displacement of 198.8 cubic inches and a nominal rating of 22.5 horsepower. Needless to add, cooling is by water and ignition by high tension magneto.

In the ignition system, the makers have given at least one indication of their attempt at simplification and the reduction of working parts to the minimum. The magneto, which is an Eisemann, has no advance lever; the spark is set and the only wiring in the system consists of the wires leading to the dash switch and the four wires leading directly to the plugs. Lubrication is by the well-known pump-over constant level system in which the oil is forced through a sight feed on the dash and thence to troughs beneath the connecting rods; the oil capacity is 1.5 gallons.

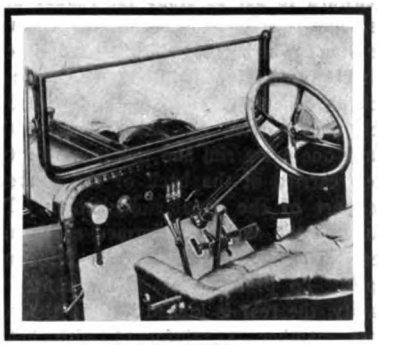
Further delving into the construction of the motor brings to light that the camshaft is formed of high carbon steel with the cams made integral; riding on them the push rods have fiber inserts to eliminate noise of the valve action, and the springs, etc., are enclosed by means of removable covers. Giving indication of the liberality of the makers, the crankshaft measures 1¾ inches in diameter and is carried in three bearings, of which two measure three inches in length and the third four inches. White brass is utilized as bearing material throughout the construction.

By way of providing smooth and sure action, the clutch has been made to operate in an oil bath, which makes plain, of course, that it is of the multiple disk type; it consists of three 9-inch disks, two of which are faced with Raybestos; the third is polished steel. The whole clutch mechanism is rendered accessible through a large hand hole placed directly beneath the floorboards in the driver's compartment. The gearset, too, is easily accessible for inspection, for, being a unit with the motor and the clutch, it is disclosed by the removal of the footboards. The gears have faces seven-eighths of an inch in width and provide the usual three forward speeds and reverse; control is selective.

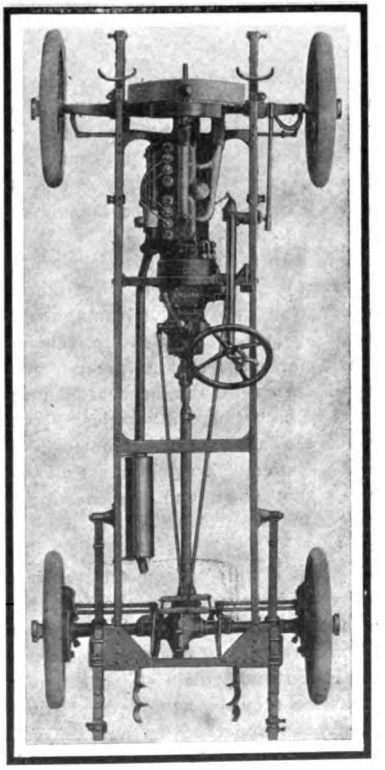
Behind the gearset, a single universal joint is interposed ahead of the rear axle, the drive shaft being enclosed in a substantial steel tube which absorbs torque reactions. The tube is well reinforced at the differential end and liberal provision for adjustment is made. The propeller shaft itself is squared where it enters the differential, construction which facilitates the



NEWEST EMPIRE FIVE-PASSENGER MODEL WHICH LISTS AT $900



CONTROL UNITS IN DETAIL



CHASSIS SHOWING SIMPLICITY

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removal of the mechanism without disturbing other parts. As a matter of fact, by detaching the spring clips and brake rods, the rear axle can be removed bodily. The drive axles are of the semi-floating type and the whole system bears the Weston-Mott nameplate.

At the front, the chassis is supported on the usual semi-elliptic spring members and in the rear three-quarter scroll elliptics are used. One interesting feature of the spring construction is that each of the leaves is carefully ground before assembly, thus ensuring easy action and the maximum of resiliency. In the rear springs, the lower leaves of the upper member are extended backward to act as stops for rubber buffers, thus relieving the springs of much of the abuse which results from hard shocks. Wheels, both front and rear, measure 32 inches in diameter and are shod with 3½-inch tires carried on Baker demountable rims; one extra rim and tire irons for two tires, carried at the back of the tonneau, are part of the regular equipment. The frame of the chassis is formed of channel steel .1562 inch thick with a 3.562-inch depth. To provide for a low center of gravity, the rear is kicked up and the rear cross member is reinforced with heavy steel gusset plates securely hot-riveted in place.

In the braking system, the service brakes are of the familiar external contracting type operating on 12-inch drums having a 2-inch face. The emergency brakes are of the internal expanding type and both sets are carefully equalized.

Regarding equipment, the list that goes with the car and is included in the price is quite complete. In addition to the mohair top with its dust envelope, there are side curtains, of course, and they operate from the inside of the car; there is a rain-vision windshield that is securely built into place; Stewart speedometer; Prest-O-Lite acetylene tank with the usual complement of oil side and tail lamps and acetylene headlamps; Baker demountable rims with one extra; tire irons; robe and foot rails; horn, jack and tools.

Car Specifications Extraordinary.

If the ambulance described by a British reporter comes up to the alleged specifications, it must be a truly wonderful vehicle, for it was said in cold type that the machine had a "20-horsepower chassis; four-cylinder tension square tube; honeycomb cylinder with fan; high tension magneto and coil accumulator; four forward speeds and reverse; elliptic rear wheels and semi-elliptic front springs, the suspension of the car being all that can be desired; change speed control; wheelbase dimension 10 feet; width over all 13 feet 3 inches."

MEASURING "COASTABILITY" OF ELECTRIC COMMERCIALS

Percentage of Miles Coasted to Miles Run Under Power Indicated by New Instrument of Simple Construction—Its Advantages.

How far will an electric vehicle coast?

To any one who has ever ridden in an electric pleasure car the almost uncanny ability of this type of vehicle to skim along for considerable distances after the power has been shut off probably remains as an easily remembered impression. That they will coast for long distances is fairly well known and their ability to do so can be put down directly to the efforts of their designers to reduce friction to the minimum, for the greater the distance that is coasted, the greater will be the mileage of the battery on a single charge; and greater mileage is what every one is striving for, with the logical accompaniment of economy of electricity.



R & L ELECTRIC COASTOMETER

But though they will coast for surprising distances, the fact remains that there are few operators who take advantage of this desirable feature. In pleasure vehicles it is not as essential that as great a part of the mileage as possible be coasted mileage as it is with commercial vehicles, of course, for with the latter, maintenance cost, which includes battery charging, must of necessity be kept down and the coasting percentage of the vehicle is an important item.

That this is fully recognized even in railroad work is revealed by the fact that in the tubes which lead from New York City to New Jersey the trains are fitted with devices which make plain the exact amount of coasting they do, as compared with the distance run under power, and the motormen are encouraged to coast as much as possible without disregarding their running schedules, by the offer of bonuses for their ability to exceed a predetermined coasting standard. Naturally the motormen have become adepts at coasting.

Applying the same principle to the operation of electric commercial vehicles, the Rich & Lindeman Mfg. Co., of 258 Broadway, New York City, has brought out a device which is styled a Coastometer, and which is designed to give an accurate record of both the mileage run under power and the mileage coasted. The device itself is shown by the accompanying illustration, which shows that it differs but little in either appearance or size from the standard and well known odometer used on automobiles.

As a matter of fact, the basis of the whole device is a simple odometer operated in the usual way by means of a flexible shaft from one of the front wheels of the vehicle. In the instrument, two rows of registering figures are employed, the upper row showing the total mileage covered with the power shut off. The mechanism by which the lower row of figures is caused to operate or remain stationary, according to whether the power is on or off, is beautifully simple. Contained within the case there is a tiny magnetic latch which is connected in parallel with the controller. When the power is on the magnetic latch locks the lower row of figures; when the power is shut off, the latch releases the lower figures, which then record the distance that is traveled with the current shut off.

So the instrument can be adapted to a number of different vehicles carrying different sized batteries, a small resistance and fuse unit forms part of the euqipment and it can be placed in any convenient place on the chassis. The device can be securely sealed so that it cannot possibly be tampered with.

As a concrete example of the operation of the device, it is pointed out by the makers that a 3½-ton electric truck with a constant load was driven over a predetermined course in New York City, no special attention being paid to coasting, the Coastometer showing a ratio of 20 per cent. coasting at the end of the trip. The same truck with the same load then was driven over the identical route and caused to coast at every opportunity. The Coastometer showed that the ratio of coasting had been increased to 30 per cent. At the same time, readings taken with an integrating watt meter showed that a saving of 11.1 per cent. had been made in the second trip over the first trip, and this by increasing the coasting only 10 per cent. There was practically no difference in the time of the two runs, indicating that the coasting did not entail offsetting delays.

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BREAKING DOWN THE FALSE BARRIER OF "CLASS"

Dealer Who Makes a Business of Inducing Owners of $5,000 Cars to Buy a $1,000 Car—Argues That Little Car Is Necessary and an Economical Adjunct—A Few Sales Ideas That Are "Different".

"What's the use of seeing him? He's got a Packard. Or Booth? He's going to buy a Peerless."

"Is that any reason why he shouldn't have a Hup?"

"But it sounds foolish to me."

"Maybe it is, but we've made such sales before and probably will make a lot more, so don't get scared just because your prospect owns a car that cost $4,000 or $5,000."

Fear of "Class" Wrong Assumption.

This mythical conversation might have occurred in the salesrooms of the Service Motor Car Co., of 373-375 Central avenue, Newark, N. J., had a new or sceptical salesman endeavored to show Manager F. C. Stowers the apparent folly of trying to sell a low-priced car like the Hupmobile to a man who is in the high-priced class; anyway, it exemplifies the company's attitude in selling Hupmobiles and demonstrates that the salesman who gets "buck fever" or "cold feet" because his prospect seems of too high a class is away wrong in his assumption.

Stowers conducts his selling business on the basis that the man who has bought a big, high-priced car not only might buy a low-priced, low-powered car but actually needs one; all that remains to be done is to convince the owner of the palatial vehicle of his need.

This invasion of the aristocratic circles of motordom in search of purchasers for Hupmobiles may seem strange to more than one dealer or salesman, but, backed up in his belief by past results, Stowers diligently continues to compile lists of owners of high-priced cars and to circularize them with letters calling their attention to their need for a little car as well.

"The man who has a big, costly car," said Stowers, "needs a little car nearly as much as the man who hasn't any car at all. The incentive for both to buy is the same; it is economy. The man whose first and only car is a low-priced vehicle chooses it because it is a less expensive purchase and operating proposition than the big car, and the man who already has a big car requires a little vehicle to enable him to cut down his upkeep expense. Economy appeals to almost any man.

"The man who has a big car must pay more to operate it than does the man who owns a little car; the big car generally has a bigger motor with more horsepower and the car is heavier. It is a car which harmonizes with the man's social position, but it costs money to run it. That is all very well; the man can afford it, but even if he can afford it, there is no reason why he shouldn't effect an economy if possible.

Recommends Little Car for Errands.

"Possibly much of the service of the car is rendered to the man's wife in trips around town and in shopping; maybe the motor is left running for minutes at a time while the car stands at the curb, although that isn't necessary in the day of electric starters, except when the weather makes this necessary. It doesn't require much argument to convince any man that it costs less to run a Hupmobile than it does to run some of the bigger cars and that it is a very desirable vehicle to use in short runs around town. Of course, when the owner and his wife, or either one of them, want to take what they might call a 'regular ride' they probably can see nothing but the 'classy' car, but for errands around town and such trips the little car fills a need which actually exists. The little car could do the big car's work on all occasions, but we wouldn't recommend that to the owner of the costly car for it might result in no sale at all.

"Our argument to him is that the little car takes the place of one horse and a light wagon in the old horse-drawn vehicle days and is ideal for that work. We have proved that our sales theory is correct, for we have made quite a few sales to men who were willing to supplement their large cars with little ones."

How Ownership of Small Cars Results.

It might also be added that, instead of the man of money looking with disdain on the low-priced, little car his attitude can be made quite the opposite. Should he own a Hupmobile only, his friends might smile at him, but when he is known to own one of the best cars there is and to use the little car for short trips, the matter assumes an entirely different aspect. The man who can buy anything his heart desires and who owns a low-priced article is not regarded as is the man who pays a low price because his means command it.

Wherefore, having compiled a list of owners of Packard, Pierce-Arrow, Locomobile, Peerless and such cars, the Service Motor Car Co. directs to these men this initial letter:

"If we can save you money and make money by doing so, we are both satisfied with ourselves and each other.

"Here is how we do it: We sell you a Hupmobile, either runabout, touring car, or coupe. This little car travels 20 miles on a gallon of gasolene, and from 800 to 1,000 miles on a gallon of cylinder oil. This saves you money. The car is a mechanical masterpiece. There is, therefore, no comeback on us for expensive repairs (for we stand back of the cars we sell). That is

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where we both make money. You save unnecessary annoyance and delay through the loss of the use of your car, we save the expense of the repair.

"We are mailing you under separate cover advance catalog. There is a Hupmobile that fits every requirement. Pick out the one that meets yours, and we will gladly prove our assertion to you without cost or obligation on your part."

Maybe the first letter doesn't bring a response, in which case the dealer follows it up a week later with this one:

"We have been called upon repeatedly to prove the assertions made in our recent letter, and in each instance it has resulted in a sale.

Little Car Like a Little Diamond.

"Is this not logical? In the first place we would not made to make an assertion we could not prove. Secondly, there are many points of superiority and things this car can do that we did not mention.

"The Hupmobile is indeed a remarkable car. It compares with more expensive cars as a small diamond to the large one—'just as good but not so much of it.' This is proven by the splendid work it has done in all parts of the world, and the universal satisfaction it has given to owners.

"Join the Hupmobile Family, and get the utmost that money can buy in motor car service and satisfaction."

And if this one doesn't do the work others along the same line are written and the company employs other sales work. Before leaving the prospect, however, the company desires to make sure that the point it wishes to convey is thoroughly understood by the object of its sales attack. Many of these attempts yield results in a field which would not even be considered by some dealers; the automobile salesman, in some instances, is too prone to regard the ownership of a high-priced car as a stone wall barrier to the vendor of small cars.

Prospects Come from Many Sources.

It should not be understood, however, that this circularization of the high-priced car owners is the feature of the Service company's sales work, for it is only a part; in fact, it may be said to be a small part. Prospects are secured from Hupmobile owners who are satisfied with their cars and their treatment, from advertising and from the many other sources employed by the average dealer. The invasion of the high-priced field is but a result of the company's aggressiveness and belief that many so-called impossible things are capable of accomplishment.

Also, this policy assumes a lesser station in the company's sales program when it is understood that this dealer combines the sale of Hupmobiles and Abbott-Detroits, and back of this amalgamation is the very definite policy that two lines are better than one, are better than three or four and, in fact, are the best business arrangement for a dealer. Concentration on one line is conscientiously advocated by some dealers, but Stowers said he is firmly convinced that two lines are better.

Variety Which Two Lines Affords.

Handling two lines affording a wide range of price and size of car, he said, made it possible to offer a choice to nearly any prospect whom the company might secure. The Hupmobile ranges from $1,050 to $1,350 and the Abbott-Detroit line picks up the price scale at $1,785 and ranges upward to $3,500. If a man wants a comparatively low-priced car the Hupmobile offers a model; does he desire something larger, roomier and more costly, he may select from the Abbott line.

"I think this the ideal arrangement," said Stowers. "Concentration on one line is all right, but it confines your activity to one class of prospects, whereas with two lines, each one containing several models, a dealer is in a position to offer something to nearly every prospect. With the Hupmobile and Abbott lines we have a variety of price and size of car.

Competing Lines Should Be Avoided.

"By two lines I do not mean competing lines. That is the worst arrangement a dealer can make. I know from experience. We started in business here about 15 months ago and at that time had in our salesroom two lines of cars which were much alike in size and price. It actually was a handicap. A prospect would look the cars over and then, there being but little difference in the prices of the size of car he had in mind, would ask which was the better car. It left the salesman in an embarrassing position. If he said the one was better the prospect very likely would think the salesman had some reason for saying so, and if he said the other was the better the same condition prevailed.

Letting Buyer Choose Muddles Him.

"If the salesman said—as he generally had to say—that 'One's as good as the other. Take your choice,' it left the prospect in a more or less muddled state of mind, which was not conducive to his concentration on any one car. As it is now, we can tell him that both cars are good cars and will give good service but that the one which costs the more naturally is the better. But we do not state that the lower-priced car will not run as well or as long as the higher-priced one.

"A dealer, also, should be sure he gets a car he can stand back of. Last year one of the lines we handled was very badly designed and cost us a lot for service. We had to stand back of it, however, to save ourselves, but we are not handling it this year."

The Service Motor Car Co. is Hupmobile distributer for the greater portion of New Jersey and is prosecuting a campaign for subdealers. The same argument that is advanced to the owner of a big car holds good with the dealer in a big car; the little one fits in and cares for business that would otherwise go by the board. The company, which has a branch in Plainfield, where it maintains what it states is the largest garage in New Jersey—three stories, 100 x 100 feet—occupies in Newark a new and up-to-date building.

Space Economy Keeps Overhead Down.

Overhead is kept down by sacrificing storage space and the limiting of what space is used to the actual needs of the business; but despite this, the quarters are not crowded. A model stockroom for Hupmobile parts has been installed on the second floor. Every part is numbered by the factory in its parts catalog and the bins in the stockroom are numbered consecutively to correspond. When a part is wanted, all that is necessary is to go to the bin of proper number. The parts catalog is the stockroom index book as well. In the repair-shop a small but sufficient machine equipment is being added. It is not pretentious and could not be classed as a full-fledged machine-shop, but it will care for all ordinary work.

Stowers, who is one of the stockholders in the company, has been engaged in the trade for some time; before locating in Newark he was an eastern territorial representative of the Reo Motor Car Co., from which vocation he gained knowledge of dealers' work, methods and problems which is proving valuable in his own venture as a retailer of cars.

Substantial Soldered Joints.

One of the most satisfactory methods of soldering together parts that offer a considerable contact surface is to "sweat" them. The surfaces to be joined are "tinned," which means that they are given a coating of solder applied to well-cleaned surfaces, with the proper flux, while the pieces are hot enough to melt the solder; while still hot they are held tightly together until the solder solidifies. If more convenient, the pieces may be allowed to cool after tinning, being reheated subsequently for joining. Obviously, the necessity for perfect cleanliness exists in no less a degree for "sweating" than for soldering.

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CAR OWNER NOT LIABLE FOR "JOY-RIDING" OF CHAUFFEUR

Unless Driver is on Employer's Business Latter Cannot be Held for Accident—New York Court Holds Chauffeur Should be Sued.

The burden of responsibility attaching to the owner of a car which meets with an accident while being used by the chauffeur not within the scope of his employment, even though with the owner's permission, was removed last week by a decision rendered in the Supreme Court for New York county by Judge Cohalan. His ruling in substance was that unless the chauffeur was engaged in his employer's business at the time of the accident the employer was not liable for damages.

The status of the car owner has been a varied one in different localities and one State even had in hand a measure which would make the owner at all times liable for the damage done by his car even though anyone broke open his garage and stole it for joy-riding purposes; it has been held on some occasions, however, that when the car owner granted permission for the use of the vehicle and had knowledge of this use he was liable.

To cover other conditions, such as the taking of the car without the owner's permission, New York State, at least, has now in effect a law which makes it grand larceny for a chauffeur to take a car out upon the road without the permission of the owner. But in Davies vs. Anglo-American Auto Tire Co., the suit before Judge Cohalan, the complainant, Davies, was injured by the car while it was being used on a pleasure trip by the chauffeur with a party of friends. He had secured his employer's permission to take the car and therefore the chauffeur and not the employer was held to be the one from whom damages should have been claimed.

The issue was made a clean-cut one by Judge Cohalan, who said: "The question, so far as the defendant Anglo-American Auto Tire Co. is concerned, is whether the chauffeur at the time of the accident was acting within the scope of his employment. The question of the ignorance or consent of the master has no bearing upon his liability. The jury has found a general verdict for both defendants, and in addition has found specially (1) that the accident was caused by the negligence of the chauffeur, and (2) that the automobile was being used by the chauffeur and his companions for pleasure purposes.

"The failure to find on the two other requests submitted is neither inconsistent with the general verdict nor with the two specific requests answered by the jury. The disputed question involves the knowledge or consent of the master. Even if the chauffeur had the consent of the master, in view of the answer to the second question the master could not be held liable. In the case above cited the automobile was being used by the chauffeur with the permission of the master, and while the chauffeur was driving the car, accompanied by others, the plaintiff was injured. Under these circumstances in that case the master was relieved from liability. Motion to set aside the verdict is denied."

Hour Record to Chassagne on Brooklands.

When, in April last, Jules Goux crowded 106 good English miles into a single hour on the Brooklands track in England with a 30-horsepower Peugeot car, it was considered to be pretty good going; and it was. It was a world's record, in fact. Now, however, another driver, Chassagne this time at the wheel of the 12-cylinder Sunbeam, of which great things were expected, has succeeded in squeezing another 1.9 miles into the hour. He traveled just 107 miles 1,672 yards in one hour flat on Thursday, Oct. 8th, and his performance, needless to point out, constitutes a world's record. His average speed figures out at 107.95 miles an hour. The record was made in the second trial, a previous attempt being abandoned because of tire trouble. During the whole of the record-breaking run the car ran like a clock and there was nothing in the way of mechanical trouble to stop it, despite its truly terrific speed.

Some of Chassagne's laps were made at a speed of 118 miles an hour during the earlier part of his run but later he dropped down to 114 and slightly lower to assure safety.

Wet Course Mars St. Louis Racemeet.

Not satisfied with his failure to establish some sure-enough records in St. Louis on Sunday, 19th inst., J. Alex. Sloan and Disbrow and Heineman and Hearne and Endicott decided to "stop over" until the 26th and to take another chance at running ahead of old Father Time. But another old fellow, old J. P. this time, again intervened and the meet had to be abandoned. But it was not abandoned until Disbrow had whirled around the track a couple of times in his Jay-Eye-See Case; he had to quit because the mud spattered his goggles. A little later, Disbrow and Endicott and Heineman went out on the track together with the avowed intention of smashing every record up to 75 miles, but after 10 miles of slipping and sliding they were compelled to give it up to save their own necks.

STATE, PROMOTING RACE AT FAIR, LIABLE FOR DAMAGES

New York State Held Accountable for 11 Deaths at 1911 Racemeet—Court's Language that Frees Spectators from Negligence.

When automobile races are held at a State fair and are promoted for profit by the organization which manages the fair, the State is liable for damages which may be caused to spectators through accidents such as occur when a car leaves the track and strikes spectators; this is the gist of an opinion handed down last week by Judge Irving G. Vann, referee of the New York State Board of Claims, in passing upon claims made for injuries sustained by spectators at the races at the 1911 New York State Fair when Lee Oldfield in a Knox crashed through a wooden fence and killed 11 people.

Besides recommending sums which should be paid to the claimants, Judge Vann placed all liability upon the State and discarded the plea that the spectators were guilty of negligence in standing along the fence at the outside of the second turn, his decision conflicting with others which held that when spectators of their own free will attend a dangerous performance, any damage which results falls on themselves.

"There was no contributory negligence on the part of the decedents or the living claimants," ruled Judge Vann. "They attended an exhibition given by the State, on its own ground, upon its invitation and after paying the admission fee charged. The grandstand was full. They stood by the fence, and where else could they stand and see the race which they had paid to see? What everybody did in the presence of the managers, anybody could do. A multitude of people stood by the fence at various points, and the fence looked like an adequate guard, although it was not in fact. There was no other place to stand if they saw the race at all. They were allowed and expected to stand where they did. No warning of danger was given and they had reason to believe the place was safe. It does not expressly appear that they knew the danger of auto racing in general, or the particular danger in this race, and I cannot find from the circumstances that such unskilled observers knew or should have known it. They had not had the experience and the opportunity to know that the commissioners had. They stood where they had a right to stand in the place provided for them, and in doing so they were not guilty of contributory negligence.

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"The great danger to spectators in automobile races is the strong tendency of a car to leave the track and run over the people. In case of an accident, whether from skidding, the explosion of a tire or other causes, as a rule the car leaves the track unless it is guarded in some way so as to prevent it. This track was not guarded at all, for the fence afforded no protection to speak of against a car weighing from 2,500 to 2,700 pounds, going at a rate approaching a mile a minute.

"The State owned the track, invited the people to attend, charged an admission fee, which gave the right of entry to any part of the grounds except the grandstand, and made money out of the races. It was not acting in a governmental capacity as in the case of hospitals, prisons, etc, but as the proprietor of a race track. The track was of such shape, form and extent, of such construction and with such slight protection against a car running off, that it was not a suitable and proper place for such a race, having in mind the safety of the spectators invited to witness the same.

"The Legislature had appropriated $40,000 for construction and repairs during the year 1911 and substantial protection could have been provided from the gate receipts, at slight expense when compared with the cost of the track, by erecting guards or other agencies to arrest the force of the car and stop it if in case of accident, it should start to leave the track.

"While the expense of some of these methods for protection cannot be overlooked, it weighs less than human life in the balance on the other side. If a race cannot be held without inherent and extreme risk to life and limb, the command of the law is that it must not be held at all.

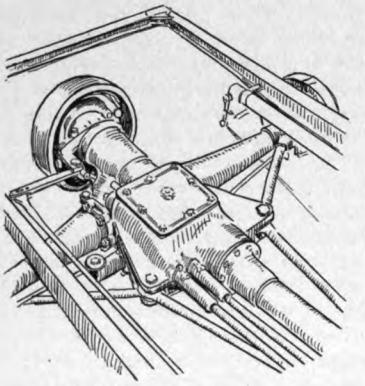
"Certain precautions were taken by the commissioners, who were men of high character and standing, but naturally anxious to keep down expenses and increase the income from the fair. The race was held under the auspices of the American Automobile Association, a strong national society, well officered and managed, which controls most of the automobile races in the country. The drivers were carefully selected and were competent.

"The State Fair Commissioners were the officers and agents of the State and what they did and what was done under their direction was done by the State, the same in effect as if they had been the agents of an individual or the officers of a private corporation that owned the track and gave the exhibition. The track belonged to the State, the fence was built by the State, the fair was held by the State, the danger was created by the State, the invitation to attend was issued by the State and the negligence was the negligence of the State."

WORM DRIVEN DAIMLER CAR HAS BRAKE ON WORM SHAFT

Friction-Drive Electric Motor Starts Engine and Gearset is Mounted on Rear Axle—Unique Setting of Cantilever Springs.

One of the latest of the Daimler cars, a four-cylinder 20-horsepower car—it is a new model throughout, incidentally—has an interesting rear axle arrangement, combining as it does several features in a new way. The axle is worm-driven, with a Lanchester type worm, and the worm shaft extends rearwardly through the casing and carries on its end the drum on which the foot-brake acts. The brake is actuated by a bell-crank to which the long brake rod, running along the side frames, is attached. The brake in



DAIMLER REAR CONSTRUCTION

this position back of the rear axle is accessible and adjustments are easily made. The unit construction idea for the rear axle group is carried out by attaching the gearcase to the axle casing, while the torque tube through which the propeller shaft runs is bolted rigidly to the gearcase. Thus the rear axle, the gearset, the torque tube and the foot brake are mounted as a unit. Braces extend from the ends of the axle casing to brackets cast on the gearcase on each side, and thence forward to the front end of the torque tube. The gearset may have either three or four speeds, as the purchaser may desire, and the final drive ratio is optional.

Another feature of the Daimler "20" is the adoption of springs of the Lanchester or cantilever type. A single semi-elliptic spring is placed in an inverted position on each side of the car—that is, the short leaves are on top instead of being at the bottom, as is usual in semi-elliptic springs. The front end is shackled to the main frame, the middle is pivoted to the frame and the rear end is rigidly clipped to the axle casing. One of the advantages of this form of spring construction is that the greater part of the weight of the spring becomes "sprung weight." A curious feature is that the springs are not parallel with the frame, but are further apart at their rear than at their front ends.

The motor is the regular Daimler-Knight, developing 36 horsepower at 1,500 r. p. m. The carburetter is a new Daimler design and is of the multiple jet type with passages communicating with the jets closed by steel balls when the suction of the pistons is not sufficient to lift them and draw from the jets. Only one jet is in constant communication with the mixing chamber, and that is the jet that is adjusted for slow running. The faster the motor runs the more steel balls are lifted and the more jets are opened up and drawn upon.

It is notable that provision has been made for the installation of a dynamo for electric lighting and for an electric starter taking its current, of course, from a battery charged by the dynamo. The starting motor drives by frictional contact of a small roller with the flywheel of the engine; depressing a pedal brings the roller against the flywheel and starts the motor.

Children May Drive in Fort Smith.

Legislation against children driving automobiles is the rule in most cities, and it has remained for Fort Smith, Ark., to furnish the exception in passing an amendment to an ordinance permitting a child of any age to drive a car "if unaccompanied by parent or guardian." The ordinance previously forbid minors under the age of 18 from driving, but upon the request of numerous car owners Mayor Read introduced and had passed the amendment, which went through by a four-to-one vote. The opponent of the measure, Commissioner Bruce, said that the presence of an older person could not eliminate the element of danger in the driving of children.

The ordinance now reads: "No child under 18 shall drive an automobile upon the public streets or boulevards unless accompanied by parent or guardian." This apparently means that if a six-year-old boy wishes to drive a car he may do so if accompanied by his mother, even if his mother doesn't know a steering knuckle from a "gas" tank. The council also rescinded the ordinance forbidding cars to stand in front of office buildings.

One Way to Use a Tire Pump.

A tire pump often can be used to good advantage in cleaning out a plugged gasolene pipe. A quick, sharp stroke of the pump will force air into the disconnected pipe at considerable pressure, and unless it is very tightly plugged will blow is clear.

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TOOL TERMINOLOGY THAT AFFECTS EFFICIENCY

Lost Time Results From Having Many Names For One Thing, and Using One Name For Many Things—What Can Be Done By Standardizing Terms—System of Designating Fractional Measurements.

In the strenuous, almost desperate, efforts that constantly are being made to increase efficiency in manufacturing plants, nothing that is done by man or machine is considered insignificant enough to overlook if there is any chance of bringing about an improvement. No time loss is too small to be worried over until eliminated. Nothing that holds back production in the smallest degree is intentionally disregarded. There is a detail, however, that actually is overlooked in some cases because, perhaps, it is not something that the efficiency expert can stand and observe or detect with the aid of his stop-watch. If a man asks for one kind of a tool and gets another, time is lost in rectifying the error. If the asker calls a thing by a name that the man asked does not understand, time is lost. If both men know several names for one tool, or several tools are known by similar names, time is lost. Loss of time is a conspirator—the arch-conspirator—against efficiency.

Eight Names for One Hose Clamp.

That such an apparently insignificant matter as the nomenclature of tools and parts can have an appreciable effect on the efficiency of a shop seems, perhaps, rather improbable at first thought; but that such actually is the case is indicated by a recent experience of the Philadelphia Fire Department. A workman was sent from one part of the shop to the other for a hose clamp. After several unsuccessful attempts had been made to find the article, the foreman went and showed the workman just what was wanted. The whole trouble was that the foreman used a name for the hose clamp that the workman did not recognize, and so he did not know what to bring even when he saw it. The incident started an investigation that revealed the fact that the hose clamp had no fewer than eight different names in that particular shop, while other parts and many tools had two or more names and some never were called by their proper names at all. The standardization of nomenclature that followed was thorough and complete, and the efficiency of the shop has consequently been increased, according to estimates, 5 per cent.

Changing the name of a rose cannot change its smell in the least; and the same may be said of that interesting little animal, the pole-cat. But if someone wanted a rose, and they brought him a pole-cat, or vice versa, there might be trouble, or at least annoyance. In other words, calling things by names that don't belong to them, or using one name for several things, or using several names for one thing—such practices are more or less apt to lead to confusion, if nothing worse.

What Makes the Wheels Go 'Round.

Yet that is what is done in a great many machine shops—automobile repair-shops and other places where the mechanical arts are practiced. Of course, in time, if the shop is not too big, the men get used to each other and learn to make allowances for nomenclatorial idiosyncrasies. But it is inevitable that more or less confusion and delay should result from such a state of affairs, and it would not be such a bad idea if the foreman—or foremen, if the shop is a big one—and the tool-room men were instructed as to the names to be used in doubtful or ambiguous cases; in this way there never would be any question, in that shop at least, as to what any given name might refer to.

While the mere avoidance of bother and inconvenience is a matter worthy of consideration, it by no means the only object to be gained by the establishment of uniform terminology for tools and parts. It is necessary only to figure up the total time lost in a week through misunderstandings and explanations to appreciate the fact that wasted conversation means wasted money—not much, perhaps, in the case of one man, but often an almost alarming total when figured up for a large shop. In other words, uniform terminology makes for efficiency, and it is efficiency that makes the financial wheels go round, and in the last analysis the financial wheels come very near to being the "whole works."

Practical Joking in the Shops.

Let it be said right away that this has no reference to the time-honored custom of sending a "green kid" to the tool-room or to some mechanic for such mythical instruments as the "left-hand monkey-wrench" to screw on a nut with a left-hand thread; or the "half-round square"; or "half a quart of goose-oil"; or to the blacksmith with a small tool (nicely made of lead) to be tempered. That is something altogether different and doubtless will endure as long as machine-shops are manned by mechanics who have a more or less untimely sense of humor.

An English or Canadian mechanic in an American shop is likely to be misunderstood when he asks where he can get a "spanner." He will be proffered various wrenches of those weird types that have hooked ends, projecting studs and other devices for turning nuts or collars that are not adapted to be turned with the conventional wrenches with square or hexagon jaws or openings. If he asked for an "open-ended wrench" he would get what he wanted right away, very likely, though on this point there are differences of opinion. Some men will call it a "solid wrench" because it is made all in one piece. Others will take for a solid wrench only one that surrounds the nut it fits. Others, again, will apply the term only to a socket wrench. And sometimes a box wrench, which is a socket wrench too, is a solid wrench.

Queer Names for Common Wrenches.

Then there is the tribe of alligator wrenches, which are ofttimes decorated with such titles as "angle wrenches," "crocodiles," "fish-heads" and others equally fanciful. "Tap-wrench, "tap-holder," "die-wrench," "screw-wrench" are some of the terms that are tied to the same tool, while the last one sometimes goes for the old reliable monkey-wrench — and so does "shiftin'-wrench," and other names of obvious derivation. Truly, the wrench family is badly mixed up as to its nomenclature.

While it does not come under the head of tool nomenclature, there is a curious and persistent habit in naming measurements that has survived from the days when mechanics were less well educated, perhaps, than most of them now are. If a man is told to drill a hole 9/16 he will have to fuss and figure to decide what drill to use; but if he is told to make it "half-inch and a sixteenth" he will be at home right away. Eleven sixty-fourths would set his brain awhirl, while "five thirty-seconds and a sixty-fourth" would be perfectly compre-

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hensible. The fact that drills are marked in a sensible way does not seem to have had much effect; and it is a fact that tool-room men have taken the trouble to mark drills and other tools in the cumbersome but sometimes better understood system, to save time and confusion. Of course, there now are plenty of shops where this plan is unknown; but there also are plenty where it is necessary to say "three-quarters and a sixteenth" to be intelligible to most of the men. Why, it used to be the custom in some of the big railroad shops to mark dimensions on blueprints with figures that looked like heiroglyphics, but which were as clear as daylight to the men. Of course, the foreman understood the "office markings," but it was easier to have the draftsman do a little extra work than to explain things to the men.

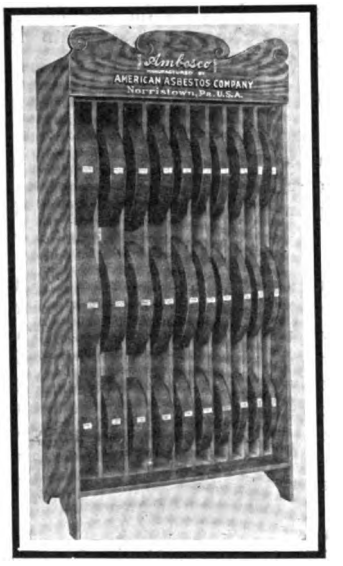
Split-pins, split keys, spring keys, spring cotters, cotter-pins, split cotters, spring-pins, cotter-keys, cotters—all are applied to the two principal types of bifurcated devices that keep nuts where they belong. In many shops a flat two-part key is a cotter, while the round affair with a loop eye is a split-pin. But while this works very well in practice where it gets started, it is hard to get it under way, and even the manufacturers of such things are far from unanimous in their selection of names. And the steel washer with a split in it and the edges of the split turned in opposite directions, which is a safeguard against the backing off of nuts and bolts, may be a lock washer, a spring washer, a nut lock, a split washer, a spring lock—regardless of the fact that some of those names are equally applicable to other devices designed for the same purpose. Not infrequently it is a matter of some little difficulty to get just the right thing in a hardware store because of this confusion; the only safe way, lacking an immediate comprehension, is to describe the article carefully and in detail and identify it on sight.

There are dozens of parts of all sorts of machines that are equally promiscuously christened; every class of manufacturing has its peculiarities in that respect, and the automobile is by no means an exception. It is certain that such tangles never will get straightened out if their straightening is left to the rank and file, for each man will make use of the names that he likes best, or that seem, to his way of looking at it, to best describe what he has in mind, or that are best understood by his associates. The only way would seem for manufacturers and others "higher up" to agree on the most suitable names and stick to them, and for tool-room men, stock keepers and foremen to adhere to the nomenclature agreed upon and by degrees make it a good deal easier to use the right names than the wrong ones.

PUTTING BRAKE LINING IN REACH OF RETAIL TRADE

Ambesco Makers Inaugurate Selling Campaign Among Jobbers and Retailers—Clever Display Device to Assist the Dealer.

Brake lining may not appear a compelling merchandizing article so far as its display qualities are concerned, but that it is possessed of more or less undeveloped possibilities in this line is the belief of the American Asbestos Co., of Morristown, Pa., maker of Ambesco, which has inaugurated a campaign among jobbers and retailers; its activities hitherto have been confined largely to the manufacturing trade.



AMBESCO DISPLAY RACK

As a feature of its campaign, the company has devised a display rack which not only brings its wares to public attention in supply and accessory stores, but places the whole line of lining sizes in view; the rack, which is attractively finished, consists of ten sections divided by upright partitions, each section being separated into three subdivisions as shown in the accompanying illustration. Rolls of narrow lining are placed at the left and the wider sizes at the right, and each roll bears a label stating its width.

The case is designed to permit and induce the jobber or retailer to carry a complete stock and to afford a service to the car owner which will tend to popularize the lining; the Ambesco makers believe that the lining which is displayed and easily obtainable by the car owner will have a greater sale than one stored in an obscure corner on a shelf or under a counter.

In addition to this feature of its sales plan, the company has worked out a cooperative advertising plan whereby large buyers of Ambesco will be assisted in the local advertising of the product.

Cranking with Cold Carburetter.

Whether the incentive was the warmth of the weather or a desire to benefit automobiling humanity it is not stated; but during the past summer the Studebaker engineers retired to the depths of a cold storage vault with a Studebaker "six" and made some interesting experiments on the volatility of gasolene at low temperatures. It was found that the lowest temperature at which gasolene—the ordinary commercial liquid—would vaporize from a piece of waste soaked and dropped on the floor was 5 degrees Fahr.; incidentally, the "six" was started without difficulty at this temperature. At a slightly lower temperature the gasolene refused to forsake its liquid state and there was "nothing doing" on the motor. The application of a cloth, soaked in hot water, to the carburetter intake warmed things up sufficiently to permit starting, however. And after leaving the car over night in cold storage—very cold, for it was 12 below zero—the hot cloth application was effective in getting the engine under way. The fact that the cranking was done by the electrical system with which the car is equipped helped some, of course.

Ball Bearings that Save Current.

A great many proprietors of machine shops—particularly small ones—are pretty well satisfied if their shafting runs fairly freely in the bearings and the bearings do not heat up. It is possible to obtain much better results than that, however, according to the Hess-Bright Mfg. Co., of Philadelphia, which cites the case of a shop in which a little 3-horsepower electric motor drives the entire equipment; and that the equipment is by no means insignificant may be gleaned from the list of machines, which includes seven automatic machines, a universal miller, a punch press, two 11-inch lathes, a two-spindle ball bearing drill and a floor grinder—13 in all. All the hangers are ball bearing, as are some of the machines, so the transmission friction is low.

Misplaced Valves Make Trouble.

After having removed the valves of a motor for any reason, the greatest care should be taken to replace them correctly; that is, to put them in the seats they came from. If this is not done it is more than likely that all will leak more or less and further, the clearance between the tappets and the stem ends is liable to be wrong.

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"FAIR" NOT "UNREASONABLE" JOY'S SERVICE DEFINITION

Says Dealer Should Weigh Problem by "Could we do the Same Thing for all Owners Unasked?"—Fairness Earns Good-will.

How far should I go in giving service? The question has cropped up to cause thought on the part of every man who has had to do with the making and selling of cars and the degrees of what is often improperly termed service are many and vary widely. Recently Henry B. Joy, president of the Packard Motor Car Co., gave a talk to his sales force on the service question as viewed by himself and stated that there is a limit beyond which no man should go. To secure a condensation of his views Printers' Ink asked him for his views on service.

"The quotation attributed to the late Marshall Field is ideal, that 'The customer is always right.' But unfortunately, all people are not exactly fair," said Joy. "This should be the guide. The customer should at least be assumed to be right. But now and then an owner and now and then a chauffeur will press for things which they ought not to have in the hope of getting them free. If they get what they ask for they think they are entitled to it, and therefore no credit accrues to the giver.

Must Treat All Alike and Fairly.

"To treat all people alike and fairly should be the slogan of every man in business. My idea has always been that it is far preferable to treat the trusting, confiding customer who makes no bluff and bluster as fairly as any other. In these days of keen pressing of claims by those who enjoy the game of bluff, seeking to get that which possibly they themselves feel may be a trifle beyond the limit of justice, it is exceedingly difficult to conduct a large and complicated business to the satisfaction of all customers. It has become plainly evident in the conditions of business to-day, as the result of the attitude of storekeepers who do not conduct their affairs squarely on the one-price, equal-treatment-to-all basis and force customers to negotiate for their rights, that the adoption of the fixed rule, 'The customer is always right,' is not easy.

"Any concern today adopting the fixed rule, 'The customer is always right,' and yielding always to the pressing demands of the importunate negotiator, would indeed be short-lived. It is a curious thing that in infrequent instances those most able to pay their shot are the ones most importunate in pressing for privileges which no business house could permit at all and survive in the struggle.

"The one-price-marked-on-the-goods house is the place where a customer is most likely to get full value for his money, rather than the house where hieroglyphics mark the selling price, permitting the adroit storekeeper or salesman to extract from the trusting and uninformed customer more than the article is worth. Bargaining and haggling and negotiating, as is the general custom abroad, is very offensive to the American who wishes to order by mail or telephone or telegraph without wasting his time.

Judgment Rather Than Fixed Rules.

"That is the same problem which is involved in the service end of any business, but it is difficult to put down hard and fast rules of what is exactly proper service. It must be left to the good judgment of the employe; meeting the conditions according to his good common sense. Where he feels that the customer is asking more than he should, the measure must always be 'Could we do the same thing for every other customer without their asking for it?' This is the basis of the equal-treatment-to-all policy.

"Of course, the business of installing a complicated piece of machinery, or an organ, or other device, must include the cost of instruction in operation. The negligent parties in the care of a device thus installed must therefore be responsible for their own negligence and pay for their own faults, if the equal-treatment-to-all policy is maintained. Otherwise, those who get along without any service and take excellent care of and intelligently operate the device, and are no burden upon the manufacturer—because it is upon the manufacturer that this burden must ultimately fall—are paying for bills which justly ought to be paid by those who are negligent.

Salesman Often Fears to Offend.

"It is very difficult for a salesman to avoid being placed in an embarrassing position when a distinguished citizen makes assertively claims for service which the salesman feels he is not justly entitled to have. The distinguished presence and distinguished ability with which a keen lawyer or business man may present his case with the salesman, and the fear the salesman has of offending him and of driving away his patronage renders the salesman weak and fearful of taking an erroneous position on behalf of the house he represents.

"The way to overcome this embarrassment, in my opinion, is to induce adroitly and inoffensively by illustration or otherwise the customer to put himself in the place of the company the salesman represents. In most cases this changes the imperious demand of the possibly irritated patron to a thoughtful study of the possible righteousness of his cause.

"It is clear that the customer cannot be always right, but it is clear also that the duty of the salesman or business house toward the customer must be that he is assumed to be right, and presumed to be making only a reasonable and fair and proper demand. The skill of a salesman in digesting the principles of the house he represents and adroitly presenting them so as not to offend and to gain the confidence and good-will of the customer is the all-important thing.

Good-will Thing of Chiefest Value.

"The good-will of the patrons of an institution is the thing of chiefest value to it in the lapse of time to maintain its industrial welfare in the struggle for business success. I assume that the good-will of a customer cannot be purchased. He cannot sell his good-will. It will not stay bought. If a commercial house does not deserve good-will by reason of the quality of its goods, by the methods under which they are sold, by the service rendered, that good-will upon which the company's success depends will slip through its fingers. If we know and can prove that we are right, fair, equitable and sound in our principles, the customer's good-will will attach involuntarily. It will belong by right of having won it fairly by right of deserving it. Is there any other possible solutiton?"

Women "Garagemen" Form Association.

The extent to which women are interested in the garage trade in Chicago was made known last week, when the Women's Auxiliary of the Chicago Garage Owners' Association was formed and plans were formulated for an old-time harvest festival and ball to be held November 15th; of Chicago's garages more than a dozen are said to enlist the active services of women, while about a half dozen are operated exclusively by women.

Soldering in Electrical Work.

The reason why soldered joints are so much to be preferred to mere metallic contact in electrical work is that in time the metal surfaces become oxydized, no matter how close the contact, and the passage of current is more or less interfered with. As the oxydization is caused by the air, the protection afforded by the solder prevents it and there is no possibility of the formation of resistance in the joint. Incidentally, the solder forms an excellent conductor of the electric current.

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RECENT DEVELOPMENTS in ACCESSORIES

Switch That Groups and Dims.

The designing of a satisfactory controlling system for the electric lights of an automobile is less simple than it might appear at first thought, for not only is it required that the lamps should be controlled in different combinations without the necessity for turning the lamps on or off separately, but in some cases it is demanded that the headlights should be capable of being dimmed for urban driving in order to comply with the laws that prohibit dazzling lights.

A device that concentrates into a little round casing 3⅛ inches in diameter the functions of a light controller and a headlight dimmer is the Hartman rotary switch and dimmer, manufactured by the Hartman Electrical Mfg. Co., of Mansfield, O. A thumb-lever controls the light groupings, which ordinarily are side and tail lights burning, head and tail lights burning, all lights burning or all lights off. A special construction gives a combination of left side and tail light, so that the car may be left at the curb with the legally required lights burning, but without consuming more electric current than is necessary.

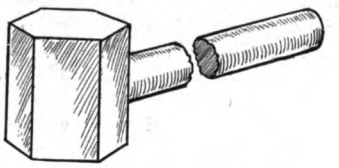
The dimming feature consists of a center push-and-pull switch which throws the headlights into series instead of parallel, the series connection cutting in half the voltage to each lamp and reducing the light and at the same time the current consumption. It is stated that with the dimmer cut in the current consumption, based on 16-candlepower lamps, will be a little more than one ampere more than with the usual 4-candlepower side lights. As there is no resistance there is no heating and no loss of current from this cause. The center push-and-pull switch also can be used for controlling an extra circuit, such as a dome lamp in an enclosed car. The switch can be operated by feeling in the dark, as it has a ball-catch device which plainly indicates the successive steps, a steel ball, backed by a spring, dropping into depressions that mark the positions.

Here's the Magnetic Handy Lamp.

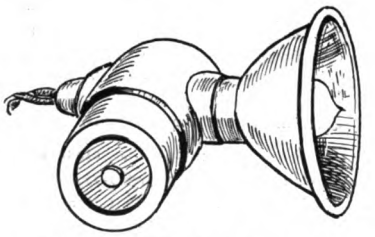
There can be no gainsaying the fact that a handy lamp is a handy lamp indeed; and by way of making such a device still handier the Adams-Bagnall Electric Co. of Cleveland, O., has evolved a lamp that can be put 'most anywhere and that will "stay put"; it is styled a magnetic handy lamp and it is shown by the accompanying illustration. In its simplest aspect it consists of the usual lamp receptacle and reflector, the bulb being a tungsten rated at four candlepower and operating on any of the voltages common to electric lighting and engine starting systems. Coupled in parallel with the bulb, there is a small electro-magnet which makes it possible to "stick" the lamp on any iron or steel part of the chassis in any position.



HARTMAN ROTARY LIGHT SWITCH



WAGNER VALVE CAP TOOL



A-B MAGNETIC HANDY LAMP

Although the magnet is very small—the whole device weighs but 13 ounces—and therefore consumes an amount of current that is practically negligible, it has a pull of some 13 pounds, thus making plain that no ordinary amount of engine vibration can jar the lamp loose. The main body of the lamp, which serves as a housing for the magnet is made of aluminum and the magnet face measures 1⅝ inches across. The widest part of the reflector measures 2½ inches from edge to edge. The device is supplied complete with all the necessary wiring and terminals, so that it can be attached directly to the battery or to any other convenient outlet at any part of the car.

Wrench for Removing Valve Caps.

Tools for removing valve caps with hexagon wrench sockets are furnished with a good many cars, but in many cases the wrenches are not sufficiently powerful and in other cases they are lost or mislaid. Anyway, it seems to be the case that the tool kit is minus such a wrench oftener than it is "plus," and to fill the want the Wagner Specialty Co., of 18 West 63rd street, New York, has brought out a line of valve cap wrenches that are substantial and amply powerful—or, rather, that have plenty of leverage by reason of handles that are long and strong.

The hexagon head, which is simply a short section of hexagon steel hardened, is fitted to a cast steel handle of a length proportionate to the diameter of the head. That's all there is to it, except that the tool will remove a tight cap and will put it back again as tightly as need be, so that there will be no leakage through insufficient screwing down. Various sizes are made to fit various makes of valve caps. The price is $1.50.

Windshields and Reflected Lights.

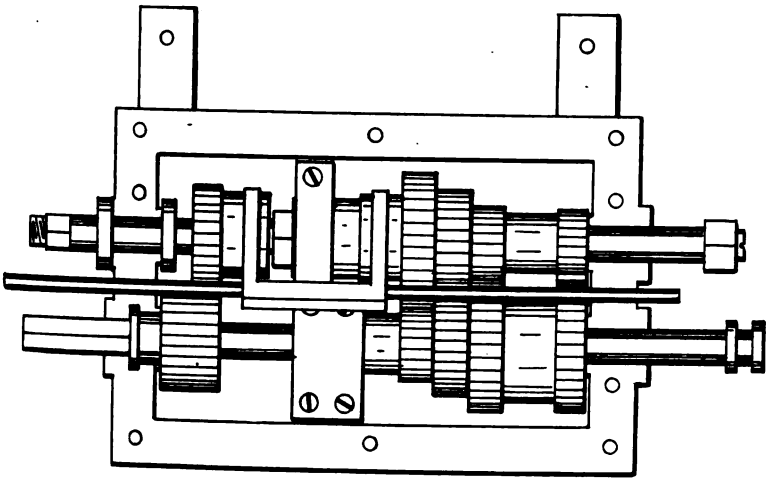
Anyone who has stood in front of a big show window, with a strong light at his back, and tried in vain to see what was behind the glass—and who hasn't?—can appreciate the fact that reflected light may make it impossible to see through perfectly transparent glass. The phenomenon is brought home to automobile drivers by the fact that lights reflected in glass windshields produce exactly the same effects, the extent to which vision is interfered with depending upon the brilliance of the reflected light as compared with the light on the road ahead. The disturbance is caused by the reflection into the driver's eyes of lights projected from the rear, and by tilting the glass so that the reflected rays are shot upward, out of eye range, the nuisance will be eliminated. If the windshield is of the double type, it may be sufficient to tilt only the upper section.

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GEARS ALWAYS MESHED IN NOTHACKER TRANSMISSION

But All Gears Are Stationary on Direct Drive—Ingenious Gear-Clutch System that Permits Unusual Method of Control.

There is nothing particularly new in a gearset in which the gears are always in mesh; neither is the gear-clutch system at all novel. Both ideas have been exploited in various forms and combinations. There is novelty, however—at least, the patent office does not deny that such is the case—in a constant-mesh, gear-clutch, change-speed system that has been developed by A. J. Nothacker, of 856 East 10th street, Brooklyn. Nothacker owns the C. J. Paulson patents, and has been working on the problem of reducing the invention to practical form for some years; the gearset now has been prought to practical commercial form and Nothacker is prepared to grant licenses for its construction.



NOTHACKER'S GEARSET IN WHICH PINIONS ARE STATIONARY ON DIRECT DRIVE

In the form shown in the accompanying illustration, the gearset provides for four forward speeds and a reverse. The most striking characteristics are that, while the gears never are separated, those not engaged in driving are stationary when the direct drive is "in" and are entirely isolated from the shafts, which, though passing through the gears, do not touch them except when in driving connection; that on the top speed the drive is direct with the primary shaft running as if solid, with no gears in motion and the lay shaft stationary; and that though the reverse and the three gear speeds are controlled by a lever and the direct drive by a pedal, no harm can result if, for instance, the direct drive should be engaged by means of the pedal while the lever was in the reverse or any intermediate speed notch, for the simple reason that the engagement of the direct drive automatically isolates the primary shaft from all the rest of the system.

As for the mechanical means by which these things are accomplished, they are quite simple. The shaft shown at the top of the illustration is the primary shaft—that is, the shaft driven directly from the clutch shaft—and the "cone" of three gears runs solid; when one gear turns all three must turn, as they are, in effect, a single piece.

By means of a sliding clutch, just at the left of the largest of the three cone gears on the primary shaft these gears are made to run with the primary shaft or to remain stationary when the shaft runs, according to the clutch position. A second clutch is interlocked with the first and moves with it, acting on the single gear at the extreme left of the primary shaft. The second clutch and the gear move together longitudinally, the wide-faced gear on the lay shaft permitting such motion. When the clutches are slid to the right the cone of gears is clutched to the shaft, as is also the single gear at the left, and the two parts of the shaft are freed from each other so as to be capable of moving separately and at different speeds.

The secondary or lay shaft is solid from end to end and is slidable longitudinally through the gears. The three cone gears meshing with the primary shaft gears are independent of each other and when the control lever is in neutral are independent of the shaft. The wide-faced gear at the left turns whenever the secondary shaft turns. On that part of the shaft that is in the coned gears there is a squared part capable of engaging and driving one gear at a time. By sliding the shaft one way or the other any one gear can be clutched to run with the shaft. The three gears at the extreme right—one on each shaft and one intermediate—are the reverse gears. The one on the secondary shaft is under clutch control the same as the cone gears.

With the foregoing details in mind, the operation of the gearset is not difficult to follow. Assuming that the car is standing and it is desired to start up in the usual way, the gear lever will be placed in neutral, so that the gears on the secondary shaft will all be loose and the high speed or direct drive pedal will be "out" so that the primary cone will be clutched to the shaft, the shaft will be divided and the gear at the left, on the tail-shaft, will be clutched. If now the motor clutch should be "in" the primary shaft and its cone will revolve, and the three cone gears on the secondary shaft also will turn, but loosely; the secondary shaft will remain stationary. By bringing the gear lever into first speed position, however, the shaft is slid longitudinally until the squared part engages with the largest gear, the other gears still running loosely. The drive now will be through the first section of the primary shaft to the secondary shaft through the big secondary gear, through the wide-faced gear at the left and thence to the tail-shaft, which, of course, drives the propeller shaft directly.

Continuing the movement of the gear shifting lever carries the squared part of the secondary shaft to the second and the first gears, brought back to neutral and slid the other way—to the right—the secondary shaft will engage the reverse gear and, of course, rotate in the opposite direction. The direct drive pedal is pushed into operating position against a spring and held "in" by a latch. When the latch is kicked off the high speed is automatically thrown out.

Don't Want Motorette Called Cyclecar.

The American Motorette Co., which recently was organized in Detroit, is one of the newcomers which is anxious that it be known that the Motorette, as its production will be styled, is not a cyclecar but a light vehicle of standard tread designed along French lines. It will be a three-passenger, shaft-driven car with 100-inch wheel base, 18-22 horsepower engine and equipped with electric lights, top, windshield, speedometer, etc., and will be listed at less than $500.

Detroiters to Make Hawk Cyclecars.

F. S. Silver, Duane Tibbetts and W. W. McIntyre, of Detroit, have formed the Hawk Motor Car Co., for the purpose of manufacturing cyclecars. The company is in the nature of a partnership, not a corporation.

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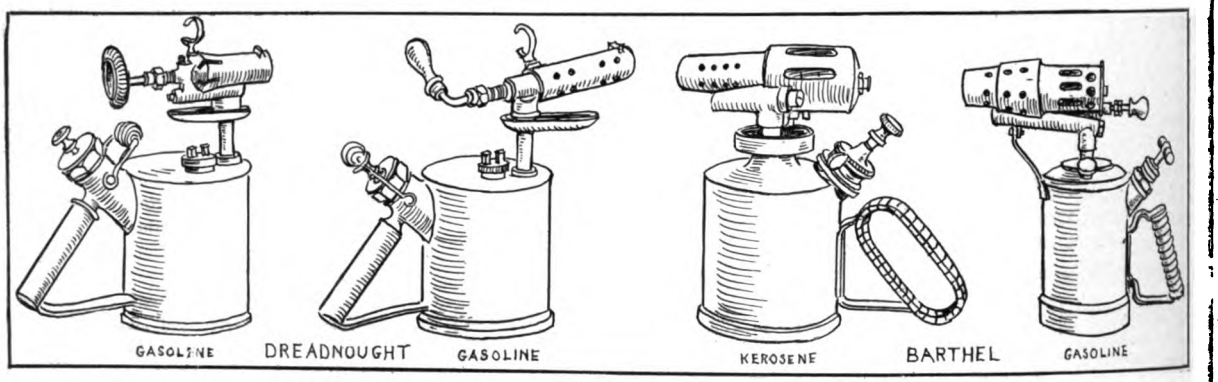
GARAGE TORCHES THAT COMPLETE EQUIPMENT

All Around Usefulness of Such Devices in the Modern Garage—Gasolene, Kerosene and Alcohol Types Contrasted and Their Differences Made Plain—How They are Constructed and How They Work.

If you cast your thoughts backward to the time when you were a boy in short trousers you probably will remember having seen a plumber busily at work beside a blazing, roaring gasolene torch apparently indifferent to the little hell beside him and all unconscious of the awe it generally inspires in those who see such devices for the first time. Or it may have been a shipbuilder dexterously burning the paint from a battered hull preparatory to restoring it to its pristine loveliness. But no matter where you saw the thing, the effect probably was the same: You wondered what made it stay lighted in the young gale that whistled between your legs; you wondered why it gave out such an infernal roar; and maybe you wondered just when the thing would go up with a bang! leaving a little smoke, perhaps, and a suggestion of burning brimstone.

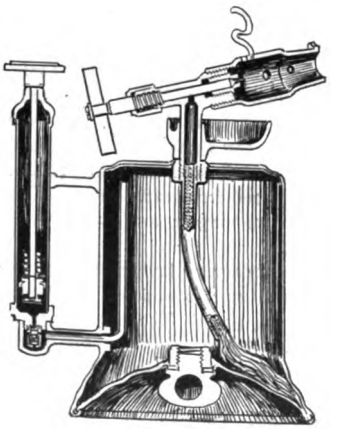
That was long before there were any automobiles, of course, or it was so long ago that automobiles were few and far between and not even those who owned them had gotten over squabbling about the correct pronunciation of "garage" and "chauffeur" and "chassis" and other kindred words imported from France along with the smell of gasolene. At that time gasolene was used chiefly for cleaning gloves and taking the stains out of carpets. A little later it became useful for other things, such as causing legislation against excessive speed, making necessary a material increase in the size of Standard Oil's already bursting coffers, and influencing controversies concerning horsepower formulas. The public garage followed as a matter of course.

Now, if there had been as many garages when you gazed on the plumber's activities as there are now you probably would have had your first introduction to a gasolene torch in one of them. For, barring plumbers and painters, garages use these portable soldering irons or doing small brazing jobs or hardening small tools or bending things that won't bend until they are heated—there are a thousand and one uses to which they can be put, especially where the garage is not equipped with a sure-enough forge, and few of them are large enough for that or have work really requiring one.



FOUR TYPES OF SMALL TORCHES THAT ARE SUITABLE FOR USE IN THE GARAGE

helfires more than they are used anywhere else; it has gotten to be that a garage scarcely is complete without at least one gasolene torch and a whole lot of them have two or three, which in itself is ample evidence of their usefulness. Any garage proprietor will testify that they are awfully handy things to have around for heating



WESTINGHOUSE IN SECTION

But if you asked that same garage proprietor how or why his gasolene torch works he would probably answer you kindly if he happened to be a kindly man, or he might suddenly discover that he has business in some other part of the shop requiring his undivided attention; also, he might heave a wrench at you on general principles. The chances are ten to one against you that you would get a satisfactory answer and ten to one with you that you had the garage proprietor stumped. Gasolene torches are a mystery to most persons, though it would be better for them if it were otherwise, for the proper care of anything from a "b'il" to an automobile requires a knowledge of its construction.

But before delving into the mysteries(?) of the internal construction of such devices, it is well to mention, casual-like, that they are of three general types. Some of them that belong in the first, and probably best-known class, burn plain, ordinary gasolene, and burn it uncommonly well; others burn the plebian variety of illuminating oil styled kerosene; and others, less numerous though none the less efficient, burn

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alcohol of either wood, denatured or spirit variety.

Working Principles of Torches.

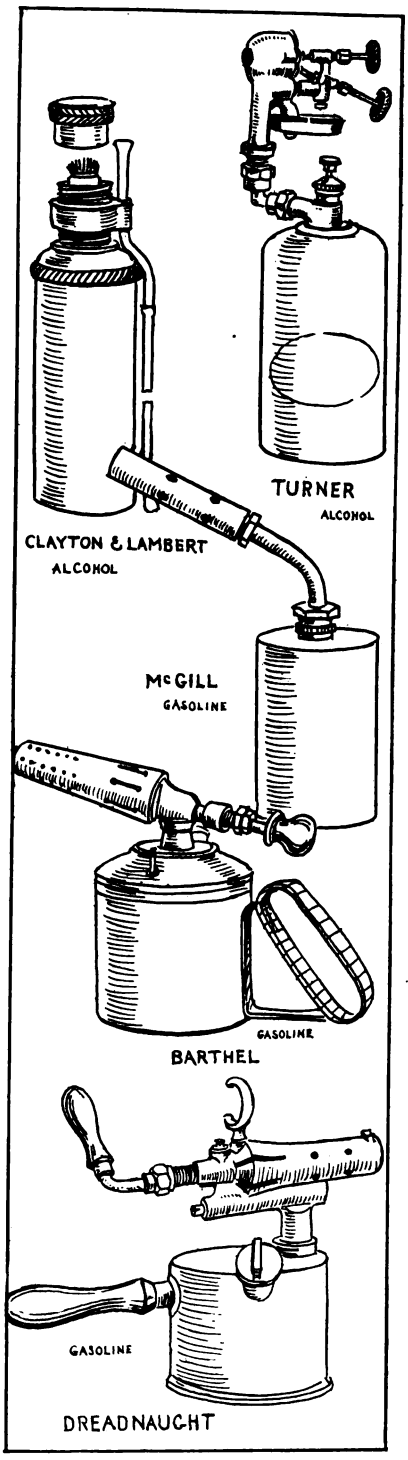
All of them work on the same principle, and that principle is almost exactly like the principle of the home variety of perfume atomizer that is such a familiar arjunct of milady's dressing table. As an atomizer salesman once said: "You puts your perfume in and the air squirts it out." Only, in the case of the gasolene, or kerosene or alcohol, torches, you puts your fuel in and the air squirts it out. And because it is lighted as it comes out, it issues forth in the form of a roaring flame; it roars because of the pressure under which the vapor issues and also because of the quick combustion. In construction, all such devices are about the same, the essential difference being in details rather than in principle.

In all of them there is a fuel container and a burner that is little more than a needle valve surrounded by a casing pierced with holes so that air can mix with the fuel; some of them have pumps for obtaining the initial pressure to squirt the fuel out—all of the larger sized ones have them—and some of them have no pumps.

Take the Westinghouse torch, for instance, which is shown herewith in section. It will serve as a good example to make plain the working of this particular style. The container itself is made of very heavy brass into which the burner is screwed. The pump, as is shown by the picture, serves also as a handle. The filler cap is at the bottom, which is slightly concaved to make it serve as a funnel. If the tank is filled and after the filling cap is screwed in place, inverted, the fuel level will be just below the top of the small pipe from the pump. Hence, when pressure is put on top of the fuel, the fuel is forced up through the pipe containing the wick to the burner; at the burner, its issuance is controlled by the needle valve, which may be opened or closed by means of a convenient fiber handle. Beneath the burner proper, there is a small drip cup. So much for the construction of the pump.

Method of Starting Combustion.

In operation, the pressure on top of the gasolene in the tank forces the fuel up the burner pipe to the burner, where it will issue in a tiny, fine stream if the needle valve is opened. If something is held in front of the burner the gasolene will drip down into the drip cup which is put there for a specific purpose and is not merely to catch drippings, for there never are any drippings when the torch once has been lighted. The drip cup serves merely as a reservoir to hold a small amount of burning fuel with which to heat the burner. When the burner becomes sufficiently heated, the fuel is vaporized, or gasified, and



SMALL TORCHES FOR SMALL WORK

it is in this state that it is burned. In every torch on the market the principle of operation is exactly the same. The pressure on the fuel starts it through the fuel nozzle where, after being heated, it is ignited as a gas and forced under its own pressure through the casing of the burner, air being drawn into the flame through the holes provided for the purpose.

Air Pressure Pumps and Valves.

Some torches have wicks and some have none; the Westinghouse is one of those that has a wick, and its function is an interesting one. It prevents too rapid flow of fuel to the needle valve, while at the same time it insures a flow through the medium of capillary attraction. Most torches will operate for a long time on an initial pumping, provided they are used where there is not too much draft upon them, and some will exhaust themselves of fuel without further pumping before they finally go out. When torches are used in a stiff breeze, their burners are likely to be cooled too much to permit of proper vaporization of the fuel and they are likely to go out either because of lack of pressure to force the fuel to the nozzle or to force it out of the nozzle. When the burner is hot, the fuel is vaporized quickly and, as it expands, its own pressure forces it out of the needle valve. Consequently, if the burner is permitted to cool, it is likely that not enough pressure will be generated to force the gas out.

The Westinghouse torch itself is distinctive for several reasons. The pump is rather smaller in diameter than usual, which insures against denting, and the valves can be taken out quite easily for cleaning. Another excellent feature is that the needle valve is set slightly off center, so that every time the flow of gas is adjusted the needle cleans its own seat of any accumulations of carbon or dirt.

Differences That Lie Only in Details.

In the Dreadnaught gasolene torches which are made by the P. Wall Mfg. Supply Co., of Pittsburgh, Pa., the construction is quite different, as at once becomes apparent from the pictures. In these torches, the pump is set partly into the tank and the filler cap is at the top, instead of at the bottom. The method of locking the lower check valve in the pump is ingenious and quite simple. There is a little wire handle-like clip that slips over the top of the pump handle, holding the plunger down and the valve on its seat. In the first picture the clip is shown released and in the second one it is shown in place over the pump plunger. The soldering iron rests are detachable and are furnished with the torches. Both of the models illustrated hold one quart of fuel.

The Barthel torch, which is produced by the Globe Gas Light Co., of Boston, Mass., is still different and is considerably larger

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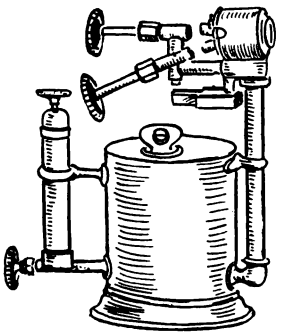
in capacity. It holds 2⅕ quarts of gasolene and, by way of making plain its capabilities in generating heat, it is pointed out by the makers that when it is going full blast it will melt a copper rod four-fifths of an inch in diameter in just 2½ minutes. One of the distinctive features of the Barthel is that the orifice of the flame tube is made of nickel, and, it is claimed, cannot be melted even when doing the heaviest brazing with the torch held up very close to the work.

The Turner Brass Works of Sycamore, Ill., produce a great variety of gasolene



BARTHEL ALCOHOL TORCH

and kerosene and alcohol torches, two of which are illustrated herewith; both of them, by the way, differ radically in construction from any of the others. In the first of them, the burner is a double one and instead of drawing air through holes pierced in the flame tube, air is drawn directly from the atmosphere by the gas as it passes the gap between the nozzles and the flame tube. By reason of this construction, the makers point out, it is possible to



TURNER DOUBLE JET GASOLENE

obtain nearly 3,000 degrees of heat Fahr. In this torch, too, the filler cap is at the top and the pump serves also as a handle. The consumption of fuel is about three-quarters of a pint an hour.

In the second Turner torch a laudable attempt has been made to produce a device for a special class of work requiring great heat and a long reach. For this reason the pump is tubular in form and all its mechanism is completely enclosed. In length, it is 5 feet 9 inches over all and the diameter is but 2 inches. The capacity is three quarts, and the consumption is about one quart an hour. The length of the flame is 12 inches under normal condition, making the torch admirably suitable for thawing frozen water pipes in more or less inaccessible places and for brazing work that requires the application of an unusually large flame.

As already has been made plain, many gasolene torches that have pumps will operate until they are practically exhausted of fuel without further pumping than that necessary to start them in operation; their own heat, in other words, keeps them going. For small work, such as light soldering jobs, it is quite common practice to make small torches that have no pump at all, the initial heat being applied directly to the burner with a match or a little burning gasolene. Once these torches are started they will continue to roar and produce a blast of flame until all their fuel is exhausted.

Small Torches for Small Jobs.

The Globe Gas Light company makes one of these small torches that is intended for a number of uses. As the picture

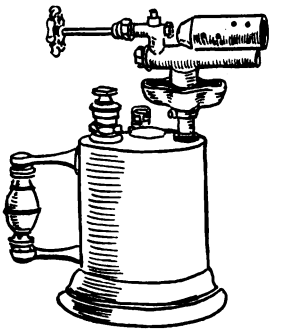


TURNER TUBULAR TYPE

shows, it has no pump, the small handle being merely to adjust the size of the flame. So that the torch can be used for a variety of small and medium sized jobs, two flame tubes are supplied with it, one of them giving a fine needle flame and the other a larger, hotter flame for larger soldering jobs. The capacity of the torch is one-third of a quart and it will burn from one-half an hour to seven hours, depending upon the flame tube used and the size of the flame. The full flame, it is claimed, will melt No. 4 copper wire in just one minute. The Wall company also makes a torch of this kind, the general characteristics of which are the same as those of the larger Dreadnaught torch which has a pump. The smaller one is illustrated herewith.

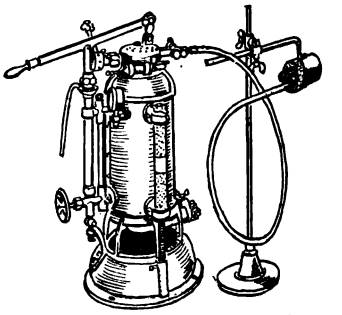
The Baby torch produced by the McGill Mfg. Co., of Valparaiso, Ind., undoubtedly is the smallest device of its kind and probably it is the simplest, too. As is shown by the picture, it consists of nothing more than a tiny reservoir measuring 2 x 3 inches and a burner screwed into the reservoir. To light the torch it is merely necessary to hold a lighted match under the neck of the burner, thus heating the fuel in the tube and gasifying it. Thereafter the torch will remain lighted for two hours before it requires refilling.

Owing to the comparative cheapness of kerosene as compared with gasolene, torches operating on what the S. O. company styles "lamp oil" appear to be gaining in popularity, and there is much to recommend them for general garage use. As kerosene is more difficult to gasify than is gasolene, some slight change in construction of kerosene torches over those



CLAYTON & LAMBERT KEROSENE

of the gasolene variety is necessary, but that the change really is slight is made plain by the accompanying pictures, one of which shows a kerosene torch produced by the Clayton & Lambert Mfg. Co., of Detroit, Mich., which scarcely differs in appearance from several of the gasolene torches illustrated, and the other shows a kerosene torch made by Boston Gas Light company. In both cases, particular attention has been given the necessity for providing the proper amount of heat thoroughly to gasify the kerosene. The capacity of the Barthel, which is made by the Boston company, is one pint and the heat generated is sufficient to melt a ¼-inch copper rod in 1½ minutes. The Clayton torch is slightly larger, holding one quart of kerosene, and as the flame is larger it generates a correspondingly greater degree of heat.



VOLCANO BRAZING TORCH

Alcohol has been long and favorably known as a heating agent, of course, the jeweller's blow pipe and alcohol lamp being a familiar adjunct of the man who, Mark Twain says, "sticks a dice box in his

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eye and laconically remarks 'new balance staff.'" But the jeweller's lamp and blow pipe scarcely are suitable for use in a garage, though it is true that many a small job can be done well with them. Something capable of more continuous use and productive of more heat is needed and the small alcohol torch fits nicely into this particular niche.

High Temperature from Alcohol.

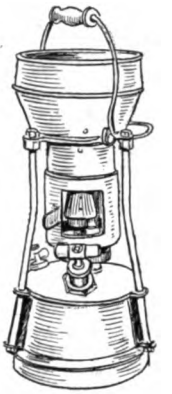
As is the case with kerosene, the use of alcohol in a torch requires but little change from gasolene construction, the principal alteration being the elimination of of the usual pump. Alcohol vaporizes very quickly and very easily, as any one who has left the cork out of an alcohol bottle can testify. Hence, little heat is required to gasify it and it maintains ite own pressure easily. In the Turner Brass Works's alcohol torch, the distinctive double jet that serves to distinguish the same maker's gasolene and kerosene torches is used. The capacity of the torch is three-quarters of a pint and the consumption about one-quarter of a pint an hour. Upward of 3,000 degrees Fahr. can be obtained with it. One of the excellent features of the torch is that the burner is swivelled so that it can be turned in any position, thus providing a means of directing the flame without necessitating a special support for the torch.

The Boston Gas Light company's Barthel alcohol torch is made plain by the accompanying picture, no explanation of the insides of the device being necessary because there are none, outside of a wick. The Clayton & Lambert company also produces alcohol torches of the same general kind, together with the blow-pipe torch that is illustrated herewith and that is a sort of second cousin to the jeweller's lamp and blow pipe. It consists of nothing more than a reservoir for alcohol, with a wick and a blow pipe terminating in a soft rubber tube designed to be inserted in the operator's mouth.

Bigger Torches for Bigger Work.

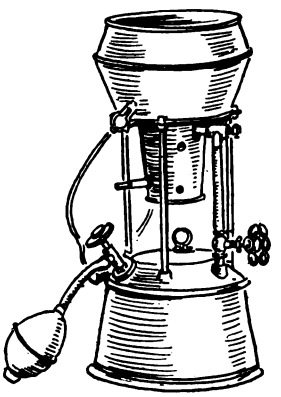
Obviously, the principles involved in the small gasolene or kerosene or alcohol torch are equally applicable in a much larger way, for brazing fires, for instance, and for work that requires a very hot fire and a great deal of it. To take care of this class of work, the Volcano Torch & Mfg. Co., of Erie, Pa., has developed the torch shown by the accompanying illustration, along with a number of other styles differing from it only in minor details. In this particular torch, the flame nozzle is mounted at the end of a long flexible pipe so that it can be placed in the most advantageous position for the work in hand. Also, so that the maximum degree of heat can be obtained quite easily, the torch is provided with a good-sized pump and is ruggedly constructed to withstand pressure up to 300 pounds. Both Clayton & Lambert and the Turner Brass Works make brazing torches for similar work.

Closely allied to the gasolene torch, and quite as useful in its own way, is the gasolene or kerosene fire pot which forms such



BARTHEL KEROSENE FURNACE

a familiar part of every plumber's stock of tools. Plumbers use them a good deal for heating solder, but they are quite as useful for any other kind of heating around a garage. In construction they are quite different from the torches, quite as a matter of course, though they are exactly similar to them in action. Making plain that but very little pressure is needed to start them, the Clay & Lambert fire pot, for in-



CLAYTON & LAMBERT GASOLENE

stance, is fitted with a small rubber bulb and a tube in lieu of a pump. In another style, however, a pump is fitted so that greater air pressure can be used and a more intense blue flame obtained. The Barthel furnace which is illustrated herewith is of the same general type, except that it operates on kerosene instead of gasolene.

It is perhaps needless to point out that very nearly any gasolene or kerosene or alcohol torch will operate in any position—right side up, bottom side up, or on its side—and hence there need be no fear that it will go up in smoke if it is operated in any position other than standing on its bottom. Consider the painter who uses his gasolene torch as he would use a paint brush—in any position and almost as carelessly!

Gasolene Export Gain 56 Per Cent.

In August of the present year 13,336,831 gallons of gasolene, valued at $1,933,218, were exported from America to foreign countries; as compared with the shipments in August, 1912, this is a gain of 4,822,871 gallons, or 56 per cent., and $903,164, or 87 per cent., in money valuation. The average price in August, 1912, was 12.1 cents, and in August, 1913, 14.5 cents, an increase of 2.4 cents, or 20 per cent.

The shipments to different countries, with average prices, for the two months of August follow, the 1912 month's statistics in each case preceding those for August, 1913. Netherlands—513,403 gallons, $48,-773, 9.7 cents; none for August, 1913. Other Europe—32,550, $4,466, 13.7 cents; 3,709,198, $321,411, 8.6 cents. Canada—6,-773,213, $784,065, 11.6 cents; 3,985,439, $556,-684, 14.2 cents. Argentina—19,000, $2,802, 14.7 cents; 1,421,169, $248,189, 17.4 cents. Brazil—492,709, $78,153, 15.8 cents; 486,500, $77,814, 15.9 cents. British Oceania—1912, none; 2,016,853, $411,449, 20.4 cents. Other Countries—683,085, $111,795, 16.3 cents; 1,-717,672, $317,671, 18.4 cents. Total—8,513,-960, $1,030,054, 12.1 cents; 13,336,831, $1,-933,218, 14.5 cents.

Cap Peak to Prevent Bedazzlement.

Regulations requiring the dimming of glaring headlights within city limits have effectually eliminated trouble from this cause where such rules are in effect; but in the country, where headlights are a necessity, a driver is liable to be dazzled by the lights of an approaching car, just as the driver of the other car is in the same unpleasant predicament. Henry Sturmey, the English writer on mechanical subjects, has devised a means of obviating such trouble, adopting the principle of the ray-filter, which can be made to shut out any desired light rays while allowing others to pass. Sturmey's device consists of a screen of transparent material of the nature of celluloid worn on the peak of the cap; the material is colored to exclude the rays that cause the dazzling effect, but does not interfere with vision. In the daytime the screen snaps back out of the way and at night is simply pulled down in front of the eyes. It is entirely out of the way when not required and when wanted does not have to be "hunted up."

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1,061,554. Transmission-Gearing. Justus H. Naumann, Woodlake, Minn., assignor of one-fourth to J. Paul Scherf, Balaton, Minn. Filed May 7, 1912. Serial No. 95,791. (Friction roller change-speed device.) 12 claims.

1,061,595. Automatic Cranking Device. Coleman H. Brown, Pulaski, Tenn. Filed Jan. 24, 1911. (Spring starter.) 11 claims.

1,026,829. Vehicle-Wheel. Knut A. Read, Oskaloosa, Iowa. Filed April 24, 1911. Serial No. 623,036. (Wheel with springs radially disposed around hub.) 1 claim.

1,026,836. Pneumatic-Tire Fabric Having Annular Elastic Zones. Lawrence A. Subers, Cleveland, Ohio. Filed Oct. 17, 1910. Serial No. 587,631. (Method of weaving tire fabric.) 5 claims.

1,026,849. Bearing. Howard E. Coffin, Detroit, Mich., assignor to Chalmers Motor Co., Detroit, Mich., a corporation of Michigan. Filed April 13, 1908. Serial No. 426,758. (Means permitting endwise removal of crankshaft.) 5 claims.

1,026,851. Running-Gear for Motor Vehicles. David M. Dearing, Jackson, Mich. Filed Nov. 12, 1909. Serial No. 527,625. (Spring-and-lever suspension.) 1 claim.

1,026,858. Pneumatic Tire for Vehicle-Wheels. Louis Antoine Garchey, Paris, France. Filed June 29, 1910. Serial No. 569,601. (Block tire with air chambers in blocks.) 3 claims.

1,026,871. Internal-Combustion Engine. Simon Lake, Milford, Conn. Filed March 21, 1911. Serial No. 615,992. (Two-cycle motor with fuel injection to hot vaporizing chamber in cylinder head.) 24 claims.

1,026,889. Carburetter for Starting Internal-Combustion Engines. Frank H. Walker, Lincoln, Neb. Filed April 21, 1911. Serial No. 622,597. (Carburetter for ignition starters.) 3 claims.

1,026,893. Pneumatic Cushion for Vehicles. Fred I. Baker, Orange, Mass. Filed Nov. 17, 1911. Serial No. 90,936. (Pneumatic cylinders replacing springs.) 2 claims.

1,026,895. Radiator. Jacob B. Beam, Punxsutawney, Pa. Original application filed Feb. 16, 1911, Serial No. 608,944. Divided and this application filed July 26, 1911. Serial No. 640,656. (Radiator with independently removable sections.) 1 claim.

1,026,896. Radiator. Jacob B. Beam, Punxsutawney, Pa. Original application filed Feb. 16, 1911, Serial No. 608,944. Divided and this application filed July 26, 1911. Serial No. 640,657. (Radiator with independently removable sections.) 1 claim.

1,026,911. Rotary Explosive-Engine. Olof F. Edquist, Denver, Col. Filed April 7, 1911. Serial No. 619,521. (Rotating cylinder motor.) 16 claims.

1,027,023. Magneto. Ernest C. Wilcox, Meriden, Conn., assignor to The Connecticut Telephone & Electric Co., Meriden, Conn., a corporation of Connecticut. Filed Dec. 17, 1908. Serial No. 467,956. (Means for automatically making connections when assembling magneto.) 13 claims.

1,027,031. Hub-Odometer. Harry P. C. Browne, New York, N. Y. Filed Oct. 19, 1910. Serial No. 587,977. (Housing for hub odometer.) 2 claims.

1,027,054. Atomizer for Liquid Fuel Motors. Joseph Leflaive, St.-Etienne, France, assignor to The Societe des Moteurs Cabathe, St.-Etienne, France, a corporation of France. Filed Aug. 14, 1911. Serial No. 644,024. (Fuel feed by compressed air.) 3 claims.

1,027,056. Means for Advancing or Retarding a Magneto Shaft Relative to a Motor Shaft. Axel Levedahl, Aurora, Ill., assignor to Aurora Automatic Machinery Company, Aurora, Ill., a corporation of Illinois. Filed Sept. 2, 1910. Serial No. 580,223. (Magneto drive through gear with shifting axis.) 7 claims.

1,027,087. Starter for Internal Combustion Engines. Cornelius Van Tubbergan and Paul Westrate, Grand Rapids, Mich. Filed Feb. 17, 1912. Serial No. 678,380. (Spring starter.) 9 claims.

1,027,105. Spring Wheel. George Crawford, New York, N. Y., and Thomas Veitch, Dumont, N. J.; said Veitch assignor to said Crawford. Filed Jan. 31, 1911. Serial No. 605,675. (Helical spring concentric with hub.) 2 claims.

1,027,108. Tire Protector. William T. Dorgan, Akron, Ohio, assignor to The Standard Tire Protector Company, Akron, Ohio, a corporation of Ohio. Filed Nov. 18, 1911. Serial No. 661,184. (Rubber and fabric outer tread.) 2 claims.

1,027,130. Cushion Tire for Vehicles. Wesley S. Holmes, Ithaca, and Welcome B. Johnson, New York, N. Y., assignors to August Zinsser, Jr., trustee, New York, N. Y. Filed Feb. 18, 1910. Serial No. 544,601. (Cushion tire of rubber and spring steel.) 1 claim.

1,027,158. Wheel. Charles L. Schwarz, Philadelphia, Pa. Filed Apr. 4, 1911. Serial No. 618,835. (Wood wheel with wedge spoke fastenings.) 1 claim.

1,027,182. Rotary Internal Explosion Engine. Jens C. Christensen and Rudolf A. F. L. Anderberg, New York, N. Y. Filed Oct. 31, 1910. Serial No. 590,020. (Rotary motor with grooved-periphery rotor.) 5 claims.

1,027,196. Lamp. John H. George, Bridgeport, Conn., assignor to Hawthorne Manufacturing Company, Incorporated, Bridgeport, Conn., a corporation of Connecticue. Filed Mar. 16, 1911. Serial No. 614,783. (Reflector construction and support.) 1 claim.

1,027,247. Tire. George Gray, Sisseton, S. D. Filed Oct. 28, 1911. Serial No. 657,221. (Rubber tread with spring backing.) 1 claim.

1,027,268. Transmission Gearing. George Washington Meredith, Chicago, Ill. Filed Sept. 16, 1910. Serial No. 582,292. (Friction transmission.) 27 claims.

1,027,273. Dynamo Electric Machine. Lewis W. Nelson, Philadelphia, Pa. Filed May 16, 1910. Serial No. 561,546. (Flywheel type generator.) 3 claims.

1,027,278. Internal Combustion Engine. Harry Ralph Ricardo, London, England. Filed Nov. 11, 1910. Serial No. 591,810. (Radial cylinder motor.) 3 claims.

1,027,288. Cushioning Device for Vehicles. John C. Sherman, Brookline, Mass. Filed June 23, 1910. Serial No. 568,447. (Pneumatic cushion system.) 14 claims.

1,027,293. Connecting Rod Bearing. Alfred T. Stuart, Flint, Mich. Filed Nov. 16, 1910. Serial No. 592,729. (Eccentric adjustment for wear.) 3 claims.

1,027,306. Automobile Lamp. Percy C. Avery, Milwaukee, Wis. Filed Feb. 4, 1911. Serial No. 606,594. (Lamp with solid cast case.) 10 claims.

1,027,369. Drive Chain. Henry W. Allingham, London, England, assignor to The Morse Chain Company, Ithaca, N. Y., a corporation of New York. Filed Apr. 3, 1911. Serial No. 618,658. (Link-belt chain construction.) 7 claims.

1,027,377. Friction Clutch. William Dennis, Milwaukee, Wis., assignor, by mesne assignments, to Verges Manufacturing Co., Milwaukee, Wis., a corporation of Wisconsin. Filed May 15, 1911. Serial No. 627,179. (Cone clutch with air cushion retarding device.) 18 claims.

1,027,380. Method of Operating Internal Combustion Engines. Robert M. Fryer, New York, N. Y., assignor of one-half to Frank B. Colman, Passaic, N. J. Filed July 5, 1910. Serial No. 570,379. (Double-acting compound motor.) 5 claims.

1,062,580. Valve Gear. Amedee Bollee, Fils Le Mans, France. Filed Apr. 20, 1911. Serial No. 622,230. (Dashpot on valve-lifter.) 7 claims.

1,062,618. Attachment to Wheels. Thomas Town end, Winnipeg, Manitoba, Canada. Filed June 25, 1912. Serial No. 705,768. (Anti-side-slip device.) 2 claims.

1,062,649. Journal Bearing. Henry Hess, Wawa, Pa., assignor to The Hess-Bright Manufacturing Company, Philadelphia, Pa., a corporation of Delaware. Filed Sept. 17, 1907. Serial No. 393,322. (Bearing with double ring of balls.) 3 claims.

1,062,675. Internal Combustion Engine. William I. Wheeler, Scottville, Ill. Filed Jan. 30, 1912. Serial No. 674,334. (Sleeve-valve motor.) 3 claims.

1,062,676. Spring Wheel. Floyd H. White, Duke, Okla. Filed May 18, 1912. Serial No. 698,273. (Wheel with telescoping spoke and springs.) 2 claims.

1,062,705. Automobile Fender. Joseph Hadka, Chicago, Ill. Filed July 12, 1912. Serial No. 709,001. (Fender-supporting bracket.) 2 claims.

1,062,738. Controller Mechanism for Explosion Engines. Charles Schmidt, Cleveland, Ohio, assignor, by mesne assignments, to The Peerless Motor Car Company, Cleveland, Ohio, a corporation of Ohio. Filed Oct. 6, 1906. Serial No. 337,695. (Timer running in oil.) 3 claims.

1,062,758. Shock Absorber. Guy L. Bayley, Berkeley, Cal. Filed Oct. 26, 1911. Serial No. 656,839. (Pneumatic shock absorber.) 4 claims.

1,062,789. Motor Vehicle Frame. Walter S. Morton, Harrisburg, Pa. Filed Mar. 5, 1912. Serial No. 681,862. (Flexible frame construction.) 10 claims.

1,062,833. Dirigible Headlight. Louis Marcel Gabriel Lourdin, Paris, France. Filed Feb. 23, 1912. Serial No. 679,436. (Means for manually controlling headlight direction.) 3 claims.

1,062,842. Headlight for Automobiles. William J. Mitchell and Milton W. Atkins, Ridgeway, Va. Filed June 26, 1912. Serial No. 706,036. (Headlight moving with steering gear.) 1 claim.

1,062,872. Vehicle Spring. Leonidas L. Abbot, Little Rock, Ark. Filed Sept. 24, 1912. Serial No. 722,043. (Elliptic spring with auxiliary coil spring and friction device.) 3 claims.

1,062,876. Automobile Transmission. Lafayette W. Blymer, Los Angeles, Cal. Filed Oct. 31, 1911. Serial No. 657,734. (Hydraulic transmission system.) 9 claims.

1,062,887. Truck. William C. Carr, Buffalo, N. Y. Filed Apr. 24, 1912. Serial No. 692,817. (Industrial or warehouse truck.) 6 claims.

1,062,898. Automobile. Fred Drew, Boston, Mass. Filed Dec. 9, 1912. Serial No. 725,674. (Cover for space between front and rear seats of car.) 2 claims.

1,062,934. Power Transmission Mechanism. Clarence W. Taylor, Chicago, Ill., assignor to Agnes Poage Taylor, Chicago, Ill. Filed Nov. 4, 1912. Serial No. 729,208. (Individual clutch bevel gear change-speed system.) 9 claims.

1,062,985. Power Transmission Mechanism. Carl J. Mellin, Schenectady, N. Y. Filed May 15, 1912. Serial No. 697,378. (Friction transmission.) 14 claims.

1,062,999. Gas Engine. Samuel J. Webb, deceased, Minden, La.; Robert D. Webb, Minden, La., by inheritance and by mesne assignments, owner of entire title. Filed Oct. 30, 1912. Serial No. 729,428. (Motor with separate compression cylinder.) 4 claims.

1,063,001. Differential Gearing. Herbert W. Alden, Detroit, Mich., assignor to The Timken-Detroit Axle Company, Detroit, Mich., a corporation of Ohio. Filed Sept. 7, 1912. Serial No. 719,241. (Differential lock interlocked with clutch.) 5 claims.

1,063,003. Automobile. Daniel N. Baxter, Wichita, Kans., assignor to Daniel N. Baxter, trustee, Wichita, Kans. Filed July 7, 1909. Serial No. 506,382. (Jointed frame system.) 2 claims.

1,063,008. Vehicle Tire. William E. Budd, Elizabeth, N. J. Filed Mar. 15, 1912. Serial No. 754,619. (Pneumatic tire with overlapping edges at rim.) 6 claims.

1,063,040. Motor Suspension and Drive. Harold H. Kennedy, Indianapolis, Ind., assignor to The Waverley Company, Indianapolis, Ind., a corporation of Indiana. Filed June 28, 1911. Serial No. 635,893. (Drive system and suspension for electric vehicle motors.) 4 claims.

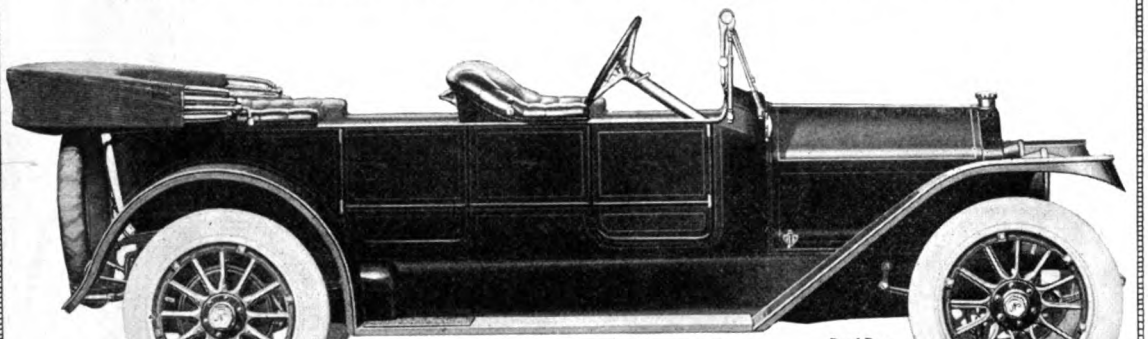
1,063,082. Valve Mechanism for Internal Combustion Engines. William R. Thomas, Sr., and William R. Thomas, Jr., Catasauqua, Pa.; said Thomas, Sr., assignor to said Thomas, Jr. Filed June 24, 1912. Serial No. 705,606. (Motor with superimposed valves in cylinder head.) 2 claims.

1,063,090. License Tag Holder. William L. Weidler, Camden, N. J. Filed Dec. 12, 1912. Serial No. 736,279. (Lncense holder with spring retaining device.) 2 claims.

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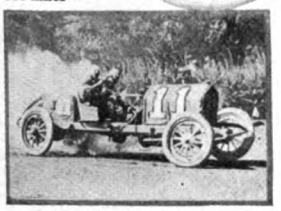
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Road Race Champion for Class C, 301-450, Santa Monica, 74.42 m. p. h.



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There can be but *one* leader. It *is* the *National*. Not once, but year after year it remains supreme—unconquered! Records, demonstrations and actual performances prove this.

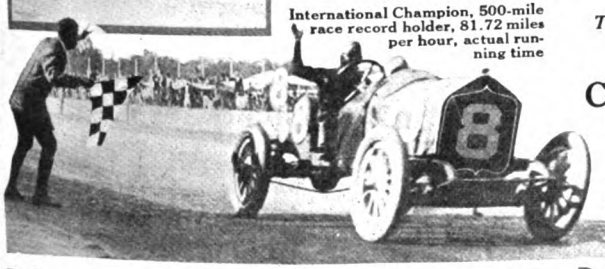
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The *National's* championship quality is bred into its very fibre and strength. Its power is indefatigable and its control marvelously simple. There is a pride in ownership of the one, absolute leader.

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Five models, $2750 to $3400

International Champion, 500-mile race record holder, 81.72 miles per hour, actual running time



Thirteen years' experience

Champion on Speedway or Broadway



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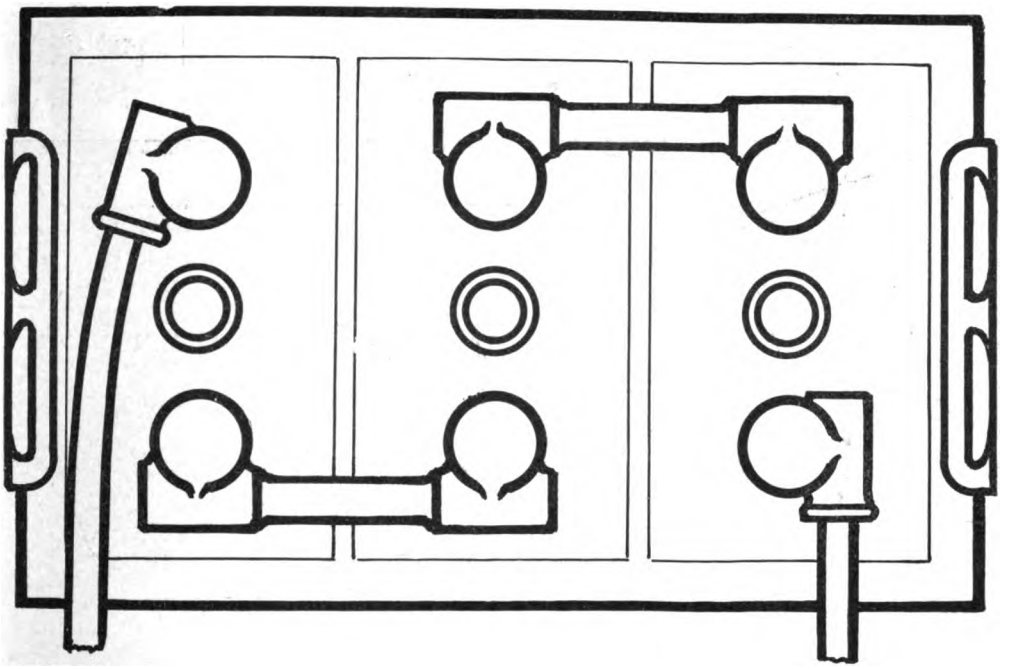
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The TUTO HORN is a distinctly TWO-TONE signal in all that the name implies. It performs every function of a warning signal intelligently and unfailingly.

Ordinary pressure on push button instantly sends forth an adequate danger warning which is sufficient nine times in ten. With other electric signals it is necessary to give minimum or maximum warning regardless of the conditions ahead.

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In all things electrical the name Elyria-Dean carries a known guarantee of goodness and efficiency that is a valuable selling asset in competition. During the past year we made and delivered over 50,000 TUTO and REXO HORNS. During the coming twelve months we will outsell any other make or type of warning signal two to one.

REXO HORN

The big-little signal for medium and low priced cars. Built, tested and guaranteed to the Elyria-Dean standard and selling at $8. ready to attach.

The REXO HORN is at once the lowest priced high quality electrical warning signal in the world.

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Elyria-Dean distributors everywhere endorse and recommend this REXO HORN. It's the one electric signal that will outsell any other make on price, efficiency or guarantee.

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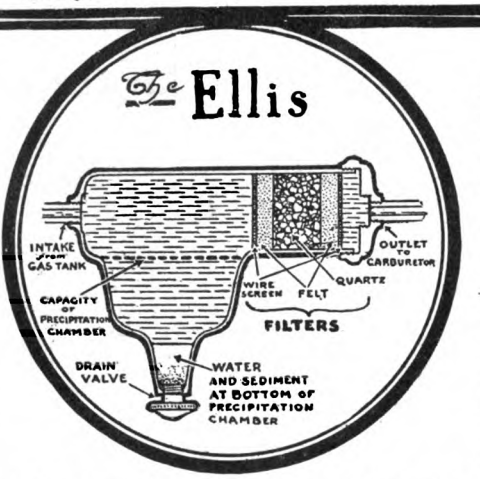
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DEFENSE or TRIBUTE

Part Two



In the early part of the nineteenth century the Americans, although a young nation, gave strong proof of their practical business sense. For years the Mediterranean had been infested by Tripolitan pirates. Almost every European nation had for years paid tribute to these pirates to indemnify their commerce. This tribute, however promptly paid, only insured partial protection and for a short time at the best.

The young American nation was more practical. They applied a remedy in the shape of a fleet of warships, which soundly thrashed the Tripolitans. However strenuous the remedy, it was effective. It put a stop once and for all to the trouble from which our commerce suffered. No one knows how long we either would have had to pay tribute or suffer the trouble had not a final and adequate remedy been administered at once.

Just so with carburetor trouble. Why suffer the expense and inconvenience when a permanent and lasting remedy is at your command which will eliminate the impurities in gasolene and by taking away the cause of carburetor trouble, do away with such trouble entirely. It's the only way. Any other relief is only temporary. It is tribute. It is not tribute to any lack of skill on the part of the carburetor manufacturers. They have done the best they can and probably carburetors are as nearly perfect as any other part of a car's make-up. It is tribute to a misunderstanding of what is called carburetor trouble. The only thing to do is to apply the remedy to the seat of the trouble. Filter the impurities from gasolene and 90% of carburetor troubles will stop. The Ellis Gasolene Purifier accomplishes the work better than anything ever devised. It costs $3.50 and its defense against carburetor trouble is effective and lasting. How does this amount compare with the amount each car owner pays as tribute to "carburetor trouble"?

The Ellis Gasolene Purifier

is simple and positive in its working. It is easy to attach and requires no more attention than draining once every week or so. Inasmuch as the impurities in gasolene are generally fine particles of paraffine, sediment, dirt, grit, water, etc., the series of screens and filters in the Purifier effectively intercept them and prevent their reaching the carburetor. Water, always present, is trapped by gravity in the chamber on the lower side of the Purifier. It is guaranteed efficient. Its cost is $3.50 and it can be installed on the fuel feed pipe of any car in half an hour. When ordering state the outside diameter of the feed pipe.

Dealers will find this one of the best and easiest selling accessories on the market. Write for full particulars

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If every motorist could distinguish "perfection of recording mechanism" as readily as a high grade watch maker, there would be only one speedometer choice---THE CORBIN-BROWN.

Built With the Accuracy and Precision of a High Grade Watch

There are all grades of speedometers just as there are all grades of watches.

And like watches, they afford a service in keeping with the manner in which they have been made.

The mere fact that an instrument bears the name of "Speedometer" is not enough!

You should demand more — perfection of mechanism—the accuracy and precision of a high grade watch!

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Its entire mechanism is extremely simple—practically consisting in its entirety of compound governors.

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Not a single Corbin-Brown is ever sent out before first being calibrated by hand and tested to absolute accuracy.

Its indicator is steady.

Its odometer records a total of 100,000 miles.

Specify the Corbin-Brown for your 1914 equipment!

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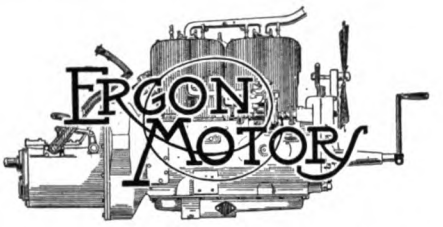
The Corbin Screw Corporation

The American Hardware Corporation, Successors

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BRANCHES: New York Chicago Philadelphia

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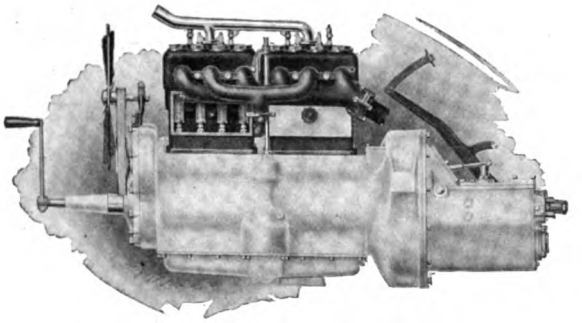


We have been preaching that concerns who have devoted their entire energies and time to the production of a certain unit of automobile construction achieve better results than the concerns which try to make everything. We have applied this theory to our own specialty, and with the best of results.

WE have for years specialized on the production of motors, for automobiles and for motor trucks.

In producing Ergon motors we have found that we could obtain certain motor parts from motor parts specialists to better advantage than we could hope to make them ourselves. As an instance; no better crank shaft forgings are made than those the Driggs-Seabury Ordinance Corporation of Sharon, Pa., supply us with for use in Ergon Motors.

Another instance, when we decided to replace timing gears with silent chain drive, we selected the Renold Silent Chain as the best for the purpose. It is a better chain than we could hope to produce. The excellence of such motor parts as are made for us by specialists in these various lines has helped to make the remarkable efficiency of Ergon Motors possible.



Ergon Motors, Standard Sizes

Model C, . . .	3¾ x 4½
Model CX, . . .	4 x 4½
Model D, . . .	4⅜ x 6

It is a long story but wonderfully interesting to all to whom the motor question is vital. If interested write us. We will be glad to go into all details with you.

HAZARD MOTOR MANUFACTURING COMPANY
ROCHESTER, NEW YORK

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WE ANNOUNCE

Weight
30 Pounds Without Switch

Diameter
5 Inches

a new Rushmore Starter similar in design, automatic action and power to the Rushmore Model B, but weighing only two-thirds as much.

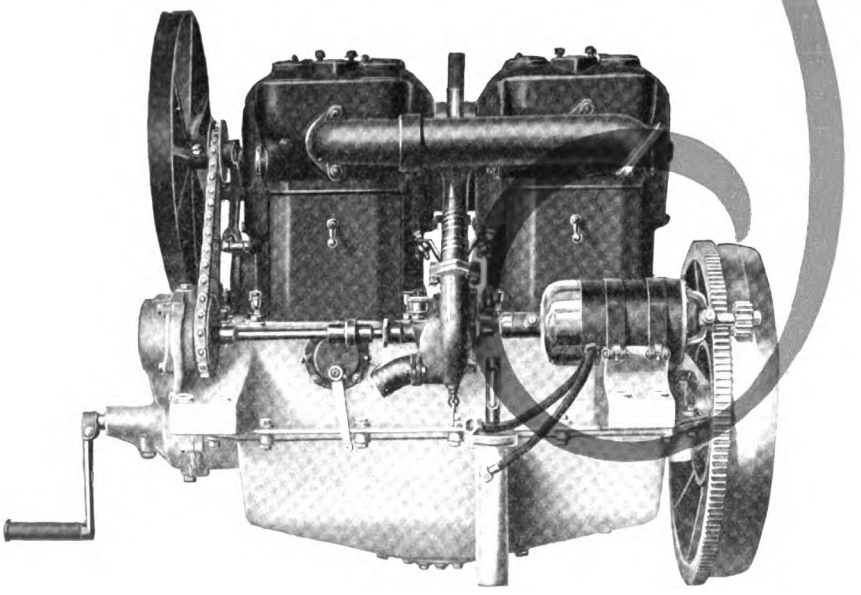
RUSHMORE STARTER
MODEL C

Normal Speed
1200 R. P. M.

Maximum H. P.
11-5 at 450 R. P. M.

The Model C operates on exactly the same system as the Models A and B. It gears directly to the flywheel, and utilizes end play of the armature to engage and disengage the pinion automatically at the proper times. It is new only in the extraordinary power delivered for its size and weight.

Rushmore Dynamo Works, Plainfield, New Jersey



Spins engine 25% to 60% faster than any other starter taking same battery current.

Weight, 30 lbs. without switch.

Diameter, 5 inches.

Normal speed, 1200 r.p.m.

Maximum h.p., 1⅕ at 450 r.p.m.

Model C Rushmore Starter on the Simplex 38 h.p. engine (bore 4⅞ in., stroke 6½ in.).

Taking 90 amperes at 5.6 volts, this Starter spins the engine at 100 r.p.m. Gear ratio, 12 to 1.

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Ambesco

FROM MINE TO BRAKE BAND







AMBESCO is a superior brake lining as well as a less expensive brake lining because it is manufactured from the crude mineral into the finished product right here within our walls. Most other brake linings are made from raw material purchased from ourselves or similar manufacturing concerns by what the trade terms brake lining jobbers. In other words, such a concern will buy the asbestos yarn or the untreated asbestos tape in quantities from asbestos manufacturers, treat and stamp it with their own trade-mark and put it upon the market. Under such conditions, the brake lining is not always uniform for it frequently is the product of tape or yarn woven upon different looms and coming from different concerns.

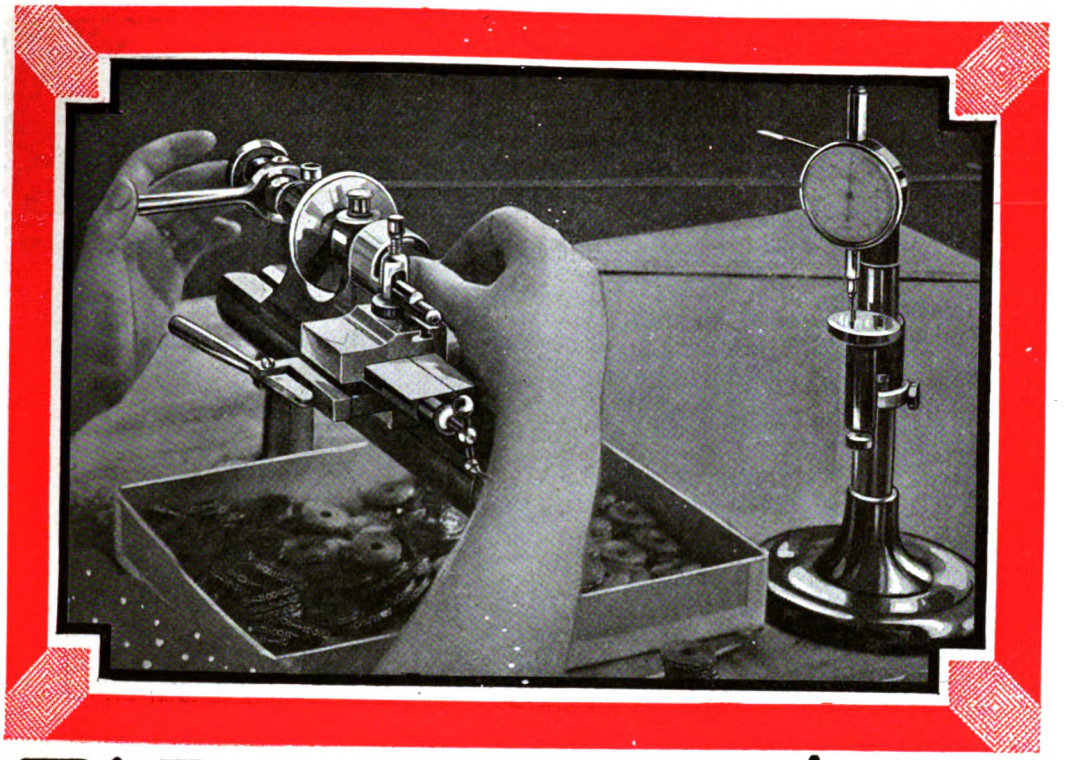
AMBESCO, however, is our own product. manufactured from the most select stock that we can mine, and produced under the most exacting inspection to insure absolute uniformity of the strands of both asbestos and brass wire. It is obvious that if there is even a slight variation in the diameter of the strands which go to make up the finished brake lining, the strands which are larger will wear out before those which are smaller. In other words, if half the strands are large and half are small, in effect your brake lining is only about half as strong as it should be. For only the large half of the strands are offering efficient service until they are worn down to the size of the smaller strands, when your whole surface takes hold as it should. But by this time you will have lost a considerable portion of your large strands and consequently the fabric as a whole is weakened

By manufacturing AMBESCO direct from the mine to the finished product, therefore, we not only are able to supply the trade with a superior product from a standpoint of efficiency but by eliminating the middle profit that is essential to any other method of operating, we are able to give the trade a far better price than is obtainable elsewhere for the same quality product.

The American Asbestos Co., Norristown, Penn.

Watch our advertisements for an important announcement to dealers and jobbers---a plan whereby you can have a complete stock of AMBESCO without tying up a lot of money

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WARNER

QUALITY AUTO-METER

■ ■ ■

Skilled Hands and Black Diamonds

HAVE you ever wondered at the unfailing accuracy with which the Warner Auto-Meter records every turn of the wheel for hundreds of thousands of miles? Such absolute accuracy is only obtainable by our high-priced manufacturing methods.

Take for example the machine for making the little dial that makes up the odometer.

On this machine are prepared the odometer discs which we import from Europe. Each disc is accurately "tailored" with a black diamond cutting point. Only the most skilled hands are engaged at this task.

We use a tool with a black diamond cutting point because it is the only one thus far discovered which will mold the exceedingly hard, durable and lasting substance.

This operation is performed on delicate watchmakers' lathes.

At the right of this picture is a gauge used to measure the thickness of the dials to 1-10,000th of an inch. Each must measure absolutely accurate in every detail.

Throughout every detail of their manufacture, this same minute care is given each Warner Auto-Meter.

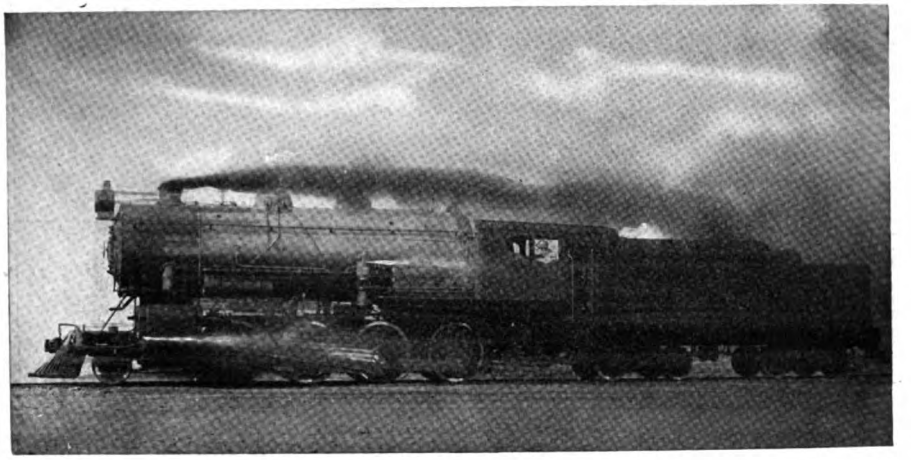
You can have a Warner on the car you buy if you ask for it.

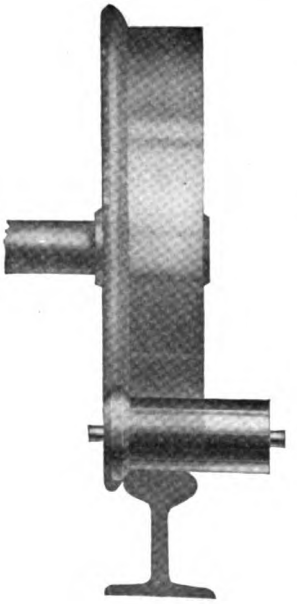
The Warner Auto-Meter Factory, Dept. 4, Beloit, Wisconsin

Stewart-Warner Speedometer Corporation

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"BOWER SAVES POWER"





¶ At every hour of the day and night, 200-ton locomotives, traveling a mile a minute or more, are held on the track and guided around curves by the flanges on the wheels---the same principle that is used in the Bower Roller Bearing.

BOWER ROLLER BEARING CO.

Detroit, Michigan

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THE unquestioned position of this company, and of its product in the world at large, is due to the energy, ability and life work of the late Thomas B. Jeffery.

To the end that his name may remain in the memories of men, we have named our new car the Jeffery. We believe it to be entirely worthy of the name we have given it.

The Thomas B. Jeffery Company

Charles T. Jeffery
President

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The Thomas B. Jeffery Company
Jeffery
Kenosha, Wis. U.S.A.

A Remarkable Car at a Remarkable Price—$1550

High Speed Powerful Mono-bloc Motor—Four Speed Transmission—Imported Annular Ball Bearings—Full Floating Rear Axle—Short Turning Radius—Vibration Eliminated.

Light Weight and Economy Through These Features

From Nothing to Forty Miles an Hour In Twenty Seconds

The Jeffery Four is an absolutely new car, so modern and so superior that it can rub shoulders with the best cars the world produces, and profit by comparison. It is a strictly high grade car, built in accordance with the latest European and American practice, but sold at an extremely low figure—$1550.

One big motor car dealer said when he saw it, "It can't be done. You can't build a car like that to sell for $1550—it's too good." We proved to him that it could be done by a manufacturer with the experience, capital and equipment. Three days later he wired us an order for eight hundred cars.

The astonishing story of this car is really the story of a great independent factory backed by forty years of manufacturing experience and five and one-half million dollars in assets.

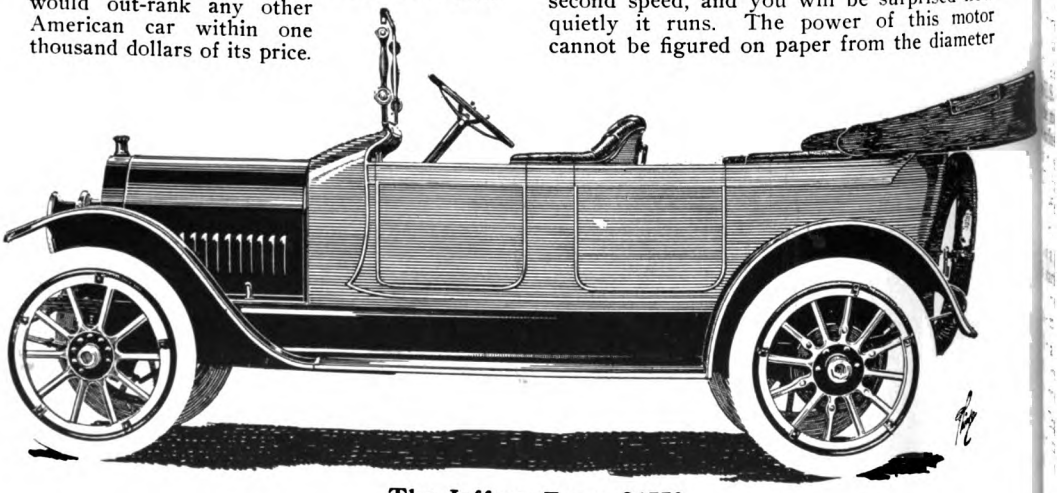
Two things we determined to give to this car without sacrificing a third. We knew that if we could accomplish these two things without losing the third, we would have a car that would out-rank any other American car within one thousand dollars of its price.

We gave it light weight and light running qualities without sacrificing comfort. Think what these things mean—less fuel consumption, less vibration, less repairs, less tire expense and real pleasure for the owner.

We began with the motor. Jeffery engineers took to pieces every successful European and American motor before deciding upon this high speed, mono-bloc design. From all these we took the best features, combined them with our own ideas and the result is a remarkable motor—powerful, light and economical.

This high speed, mono-bloc motor is compact and simple. It develops, at 2200 revolutions per minute, forty horse power. The cylinders, 3¾ inch bore and 5¼ inch stroke, are formed in one remarkable solid casting, together with the valve seats and water jackets. This makes it strong, without vibration and easy to cool.

It can travel forty miles per hour on second speed, and you will be surprised how quietly it runs. The power of this motor cannot be figured on paper from the diameter



The Jeffery Four, $1550

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of the cylinder or the length of the piston stroke. It takes motor speed to make power and, when delivered to the rear axle through mechanism which is almost entirely free from friction, the result is wonderful.

The reciprocating parts of the motor are made as light as possible, consistent with strength. The pistons, together with the wrist pins and piston rings, weigh but three pounds each. Usually pistons weigh from four and one-half to seven pounds each.

This motor gets away with snap and go—the kind you like to feel. Touch the throttle and in seven seconds you are making twenty miles an hour, in twenty seconds forty miles an hour—fifty miles per hour in fifty-five seconds.

The oiling system is the latest. It is a combination of the internal force feed and constant level splash systems. A reservoir under the crank case contains the supply of oil.



Direct front view of Jeffery Four

The oil pressure gauge on the dash, or the indicators on the crank case, will tell you instantly what is going on.

The electric starting and lighting system is the U. S. L. All manufacturers know that this is the most expensive made and is protected by exclusive patents. We know by experience that it is the best. Another car selling for $3250 charges $200 extra for this equipment. The Jeffery car could be sold for $100 less if equipped in any other way.

Not a gear, cam, chain or bearing is used in this starter's construction—that's what makes it so quiet. None of that grinding noise you notice in the common starter.

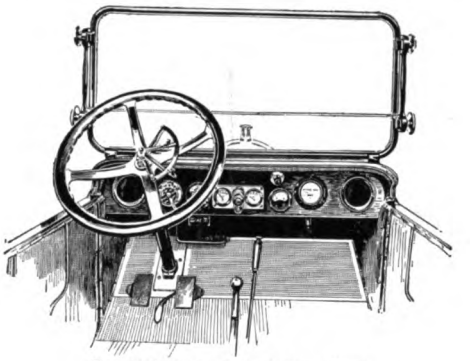
Not a single car in America selling under two thousand dollars, except the Jeffery Four, is equipped with the U. S. L.

An English motor car manufacturer investigating starters in this country said in *The Autocar*, the leading English motoring publication, that in two years the gear driven starter would be obsolete.

The clutch is a perfected cone, leather faced with spring inserts.

Every mechanic knows the effectiveness and simplicity of this type.

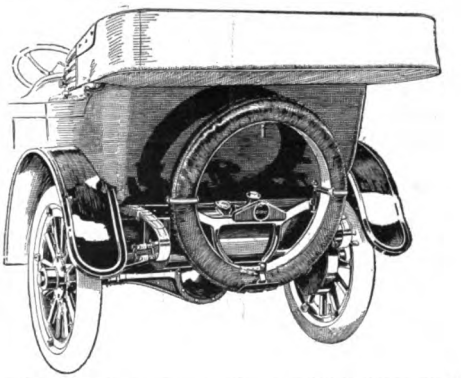
Between the clutch and the four speed transmission there is a feature absolutely new to American cars—the famous Daimler flexible leather coupling. Daimler introduced it first in his large omnibuses in use throughout Europe. We tested it for thousands of miles before adopting it on the Jeffery car.



Forward dash of the Jeffery Four
All attachments set in

The transmission with four speeds forward and one reverse, weighs less than one hundred pounds. It's the last word in flexibility of control and ease of operation.

The transmission case is solidly bolted to two cross members of the frame and located amidships, providing center control and left hand steer, thus conforming to that greatest influence—public opinion.



Rear of Jeffery Four. Pressure Gasoline Tank rigidly attached to extended frame members

The Thomas B. Jeffery Company
Jeffery
Kenosha, Wis. U.S.A.

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The Thomas B. Jeffery Company

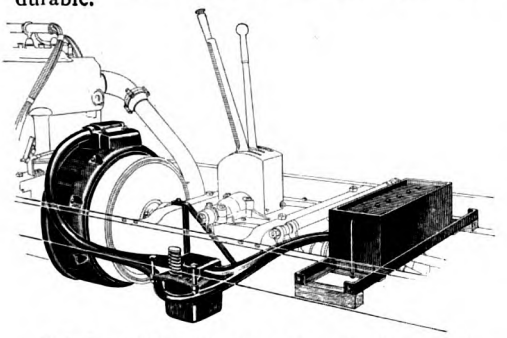
Jeffery

Kenosha, Wis. U.S.A.

The transmission shafts are of vanadium steel hung in five imported annular ball bearings.

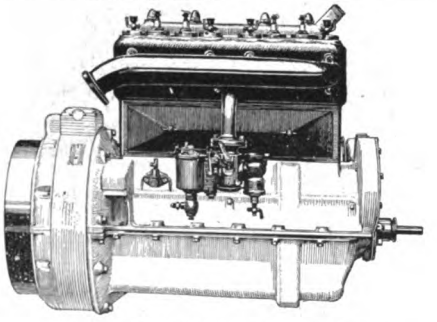
We are proud of our transmission gears. We make them ourselves and the fifty-two tooth bevel gear is, beyond question, the most correctly cut gear in America today.

Ask any mechanic about Spicer universal joints. Two of these are located between the transmission and the rear axle. The drive shaft is many times stronger than the heaviest strain you could ever place upon it. Made of the finest chrome nickel steel, heat treated, it is the most expensive we can buy. These joints are fully housed, light, well lubricated and durable.



U. S. L. starting and lighting system directly connected. No chains, gears or belts

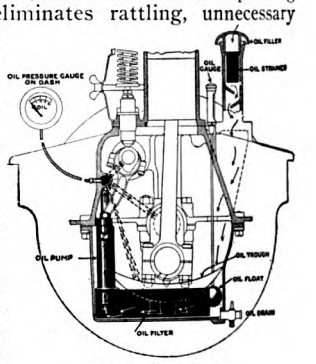
The rear axle is of full floating type, fitted with imported annular ball bearings—the same quality axle as those used on all highest priced electric vehicles. Few American built gasoline cars have been able to adopt them on account of their cost. Consider, if you can, the frictionless passage of power from the high speed, well balanced motor through the leather coupling, into the four speed transmission, rolling smoothly on imported annular ball bearings, and back through the Spicer universal joints to this remarkable axle.



Jeffery Four high speed mono-bloc motor

What is the result? You can speed up this car to forty miles per hour, shut off the motor and coast half a mile. The mere pressure of forty-five pounds will start it rolling on the floor. Not a ball bearing in it that has not been submitted to at least three engineers for an opinion as to size. Light running—of course—economy again, you see.

There are two brakes—a service, and an emergency brake, each of internal expanding type. This eliminates rattling, unnecessary parts, and keeps them free from dust, grit and mud.



Jeffery oiling system

Owing to compactness, we have been able to reduce the wheel base to 116 inches, yet we have retained the comfortable lines of the body, cutting out weight and again reducing upkeep.

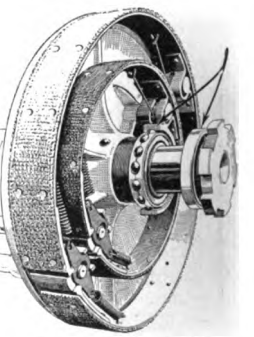
For this wheel base we have provided 34x4 inch wheels, equipped with demountable rims. Short turning space is provided. The Jeffery Four will turn in a forty-two foot circle.

The springs are of vanadium steel, two inches wide and fifty inches long, scientifically heat treated. We use vanadium steel because of its longer life and greater elasticity.

The front axle of vanadium steel is a marvel of lightness and strength. It weighs but twenty-nine pounds, but it took thirty-two thousand pounds to twist it in our torsion test machine. The radiator holds five and one-half gallons of water and has over ten thousand square inches of cooling surface. Circulation is by centrifugal pump.

Rothschild designed the body. It's an improvement on the Lancia—that beautiful Italian car. It is Brewster green in color.

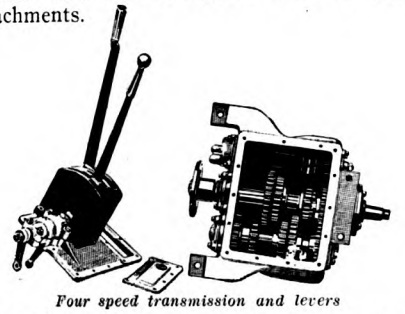
If we did not have a press of fifteen hundred tons capacity we could not manufacture this body and put it on a car at $1550. Sixteen dies were used in making the body alone, and the die for the cowl took three months to build.



Jeffery Four brakes showing imported annular ball bearings

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The upholstery is of the finest leather and hair. The doors are extremely wide, 23½ inches. The dash is replete with all modern attachments.

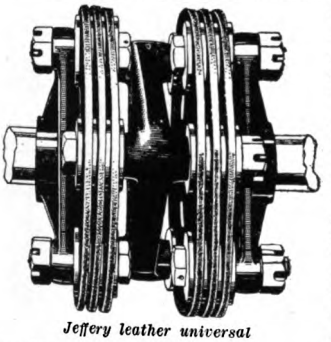


Four speed transmission and levers

The hinges on the door are of the patented invisible type. The back of the front seat is finished in the finest leather.

A pressure-feed gasoline tank with gauge carried behind, and with pump operated from the cam shaft, insures an even flow up hill or down. An auxiliary pressure pump is located on the dash, both for oil and air emergency.

The electric light switch attachment is the most clever arrangement of its kind yet devised. The lights can be dimmed at any time for city driving. The equipment includes top of finest material, rain vision wind shield, Stewart-Warner speedometer, ammeter, extra demountable rim with brackets, electrically lighted dash, Klaxet horn, Solar electric lamps and complete tool equipment. Power tire pump, $25 extra.



Jeffery leather universal

The Jeffery Six

The Jeffery Six is a duplicate of the wonderful Jeffery Four, except for size, and the fact that the cylinders are cast in pairs.

This car, which sells at $2250, has all the best features of all the best cars. We built it for the man who demands Jeffery quality in a six.

It is light—actual scale weight 3700 pounds—with full equipment. We made it luxurious without making it extravagant.

It is a beautiful car and a delight to drive. It is smooth, flexible and responsive. We know that a better Six cannot be built for the simple reason that parts of better quality have yet to be produced.

High Grade Features of Jeffery Six

Forty-eight horse power motor, cylinders cast in pairs, 3¾x5¼.

Extra large bearings.

Bosch Duplex ignition.

Rayfield carburetor.

Imported annular ball bearings throughout.

Four forward speed transmission.

Warner auto meter.

U. S. L. starting and lighting system.

Power tire pump.

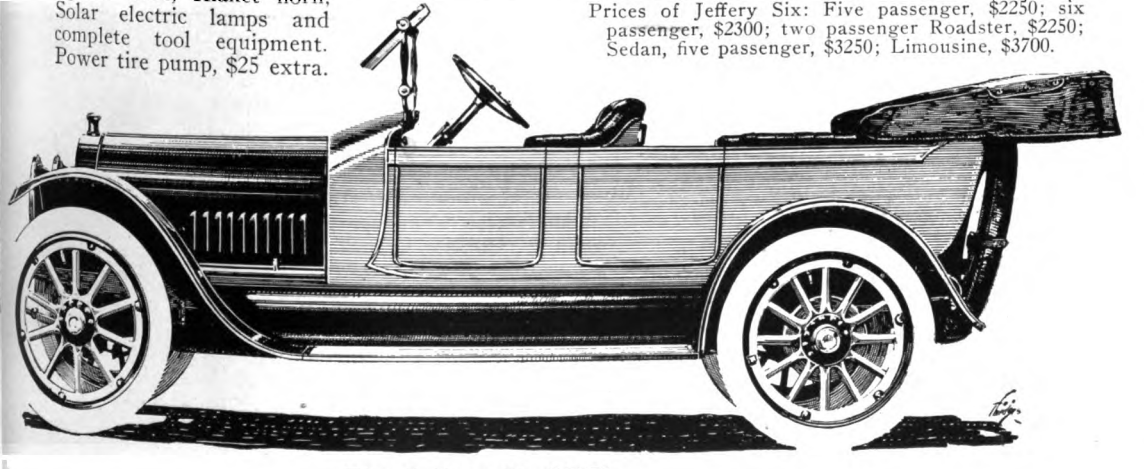
Wheels and tires 36 x 4½. Sedan and Limousine 37 x 5 inch tires. Wheel base 128 inches. Demountable rims.

Rothschild body with extra wide doors and low, deep seats.

Pressure feed gasoline tank with gauge.

Full floating rear axle.

Prices of Jeffery Six: Five passenger, $2250; six passenger, $2300; two passenger Roadster, $2250; Sedan, five passenger, $3250; Limousine, $3700.



The Jeffery Six $2250

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Fifteen Jeffery Four Features

High speed mono-bloc motor, European type. From nothing to forty miles an hour in twenty seconds—high grade.

U. S. L. starting and lighting system—high grade. This car could be sold for $100 less if equipped in any other way.

Imported annular ball bearings throughout—high grade. Standard on the world's best cars.

Spicer universal joints—high grade. Ask any mechanic.

Combination force feed and splash oiling system—high grade. The most economical we know.

Four forward speed transmission—high grade. Control levers directly over transmission.

Full floating type rear axle on imported annular ball bearings—high grade. Same quality as that used on all highest priced electric vehicles.

Body designed by Rothschild of New York—high grade. The hit of the Paris show.

Leather universal between clutch and transmission—high grade.

Vanadium steel springs and front axle—high grade.

Rayfield carburetor—high grade.

Left drive and center control—high grade.

Pressure feed gasoline tank in rear, and pump operated through cam shaft—high grade.

Bosch Duplex ignition—high grade.

Solar Lamps—high grade. Operated by four-position switch—the simplest ever made.

Prices of Jeffery Four

Built in five body styles. Five passenger touring, $1550. Two passenger roadster, $1550. Two passenger Coupelette, enclosed, inside drive, $1950. Four passenger Sedan, enclosed, inside drive, $2350. Five passenger limousine, $3000.

Dealers have already ordered over fifty per cent of our output.

Five and one-half million dollars in assets, with the highest credit in the industry, and a factory equipped with three million dollars' worth of the latest machinery, and manned by a loyal body of workmen, are the things that made the Jeffery Four and Six possible.

Few manufacturers in the industry can produce a car like the Jeffery Four to sell for $1550, and make a cent of profit—except Jeffery.

True, the margin will be small, but the sales will be enormous and the quantity production large. We will be satisfied with the profit because the owner will be satisfied with his car.

Although this is the first public announcement of the Jeffery Four and Six, dealers have already ordered more than fifty per cent of our output for the coming year. One dealer, recognized as the leader in his section of the country, when he heard of the new cars, traveled fifteen hundred miles to ask for the right to sell them.

Big dealers in big cities all over the country are dropping other lines or organizing new companies to take on the Jeffery line. They were quick to recognize in this car a wonderful opportunity. They know that only a concern with the capital, equipment and experience of the Jeffery Company can produce such a car at such a price.

Deliveries have already begun and the output is increasing daily. The orders for immediate delivery have reached a high figure, but the factory can handle the demand.

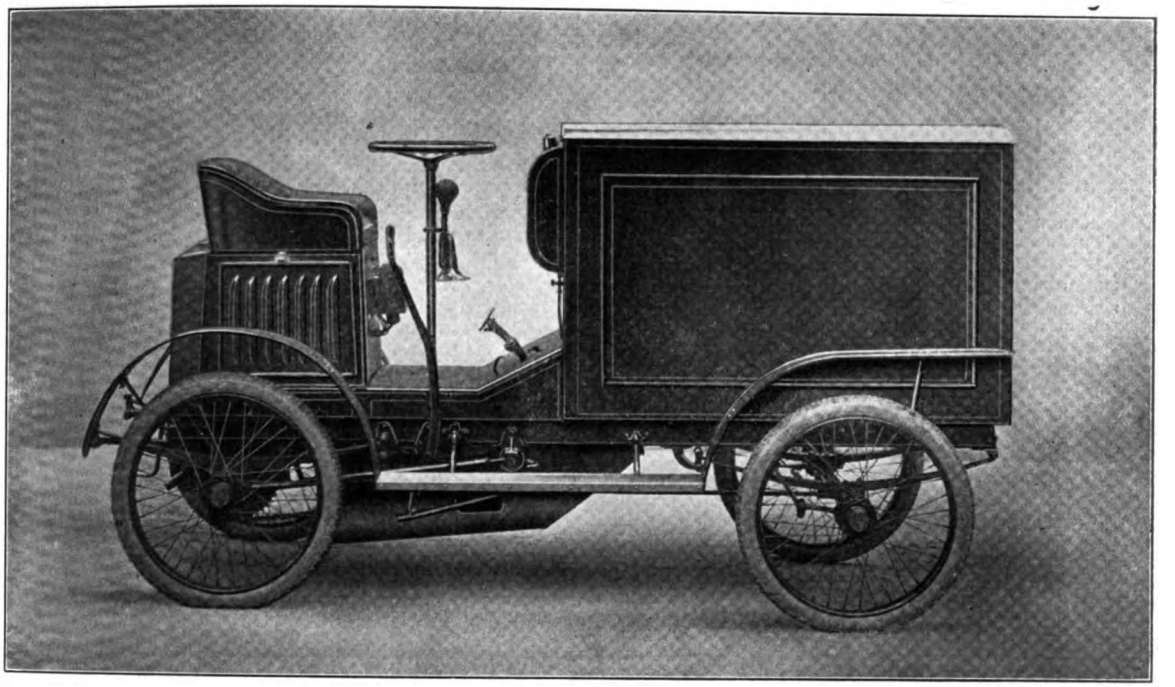
Successful dealers want to become associated with a financially strong and successful organization.

Wire or write immediately for territorial reservations.

The Thomas B. Jeffery Company

Kenosha, Wisconsin

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A BAD WEATHER CAR

THE

MOTOKART

The MOTOKART is not a seasonable car, not a car selling only during Spring months, as in the case of pleasure vehicles, but throughout the year. Your Grocer, Butcher, Baker or Dry Goods Man will tell you that as bad weather approaches the call for delivery increases many fold, buyers who ordinarily carry away their merchandise demand that goods be sent home in rainy weather, and this demand increases until its culmination during the Holiday Season, when the delivery service of every store is taxed to its utmost capacity. Now is the time to talk MOTOKARTS, to start the entering wedge with merchants in your town. We still have considerable territory open for negotiation with reliable, energetic dealers.

SPECIFICATIONS

Engine: Two Cylinder, Four Cycle, 3⅝ x 4, Water Cooled.

Wheel Base: 69″.

Tread: 44″.

Over All Dimensions: Length, 106″; Height, 56″; Width, 52″.

Box Dimensions: Length, 51″; Height, 32″; Width, 32″.

Friction Drive, Wire Wheels equipped with 26 x 2½ Non-Skid Tires, Pressed Steel Frame, Semi-elliptic Springs, Steel Body.

Capacity: 400 lbs.

Price: $400.00

TARRYTOWN MOTOR CAR CO., Inc.

Factory: Tarrytown, N. Y. **Office: 1790 Broadway, N. Y. City**

Address all correspondence to New York Office

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No Other "Six" in the World Near this Price

The new Studebaker "Six" stands absolutely alone and apart in the entire field of six-cylinder cars.

At its price of $1575—less by hundreds than any other "Six"—it confers the operative advantages of the "Six" emphasized and enhanced because this "SIX" is a Studebaker-manufactured "SIX."

It affords passenger capacity for seven.

It brings the manifest advantages of electric lighting and starting through a two-unit system that has proved itself on thousands of Studebaker cars.

Never before has such a car been offered at $1575.

Today there is not such another car, at this price, in the entire world.

Six Thousand Manufacturing Operations

How completely the Studebaker "SIX" is the product of the great Studebaker plants you will realize when you know that its construction requires more than 6,000 manufacturing operations.

Throughout the rear axle and transmission, and in the front wheels we use 13 Timken roller bearings for quiet, easy running.

In fuel consumption we believe the "SIX" will match, if not surpass, the economy of any car of equal horsepower. Its motor size is 3½ x 5 inches.

It is economical because, in spite of its 121-inch wheelbase it is light, and easy on its 34 x 4 inch tires; yet it is wonderfully strong.

Carries Seven in Comfort

It is generously roomy and richly upholstered, and carries its seven passengers in utmost comfort.

In design and line, the "SIX" acknowledges no greater beauty and grace.

The starting and lighting system is the Wagner two-unit, starting motor and generator separate.

Lamps are Gray & Davis's highest quality, parabolic type.

In short, the "SIX" lacks nothing in style beauty or comfort.

Studebaker

Electrically Started
Electrically Lighted
Seven-Passenger

A "Six" That Has a Field All to Itself

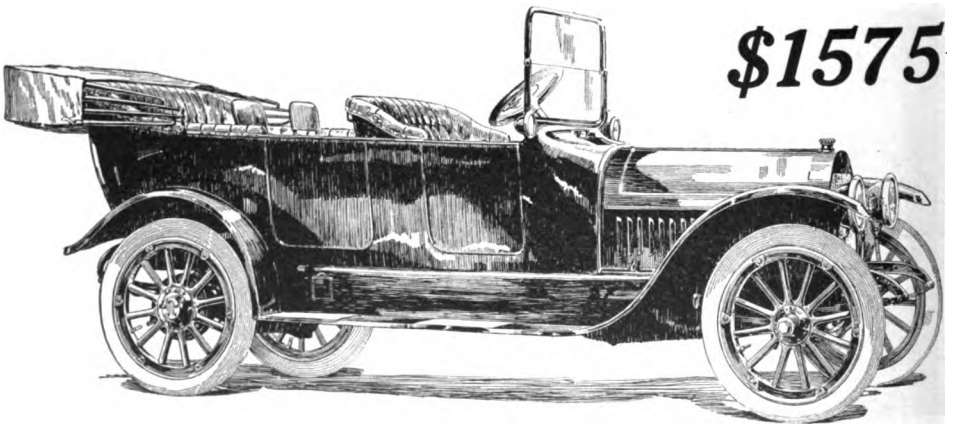
The superb new Studebaker "SIX" is a manufactured "Six" down to the smallest essential detail.

Any other kind of a "six" we decline to consider in comparison.

In a "six" you must have manufactured accuracy—every "six" part must synchronize with every other part.

And—even so—there is no other "six," either assembled or manufactured, which is even near the Studebaker "SIX" in price.

Studebaker, Detroit, Mich.



$1575

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"4" Studebaker

Electrically Started
Electrically Lighted
Five-Passenger

Try to Find Another "Four" Like This

We hold fast to our positive convictions concerning this new Studebaker "Four."

We are convinced, to begin with, that you will not find another "four" which compares with it in value.

We are convinced that it will eventually compel those above it in price to give more; and those below it, to charge less.

We believe it will cause more changes in ownership among those who have waited for a higher quality to be brought down to this price than any "four" which has preceded it.

Studebaker, Detroit, Mich.

This "Four" the Final Word Among Four-Cylinder Cars

This Studebaker "FOUR" has been developed from our experience in building 110,000 "FOURS."

Its price, $1050, represents the outside limit of price for a "Four," because no "Four" can give more, in actual value or performance, than this one does.

So its price is right. Its capacity is right. Its power is right. It is the right type—the last word among four-cylinder cars.

Thirteen Timken Bearings

Nothing that we can say here will give you an adequate idea of the power possibilities of this car—or of the things of which it is actually capable.

The long-stroke motor presents the latest approved engineering practice—cylinders cast en bloc, valves enclosed, exhaust and intake manifolds integral.

Thirteen Timken bearings reduce friction and wear to the minimum at every point in the transmission and rear axle in front wheel hubs.

Its rear axle is of the full-floating type, and completely accessible.

The rear springs are full elliptic, very long and easy, and with the lower member suspended beneath the axle.

Electric Lighting and Starting

It has left hand steering and central control.

The electrical starting and lighting equipment is the Wagner two-unit system.

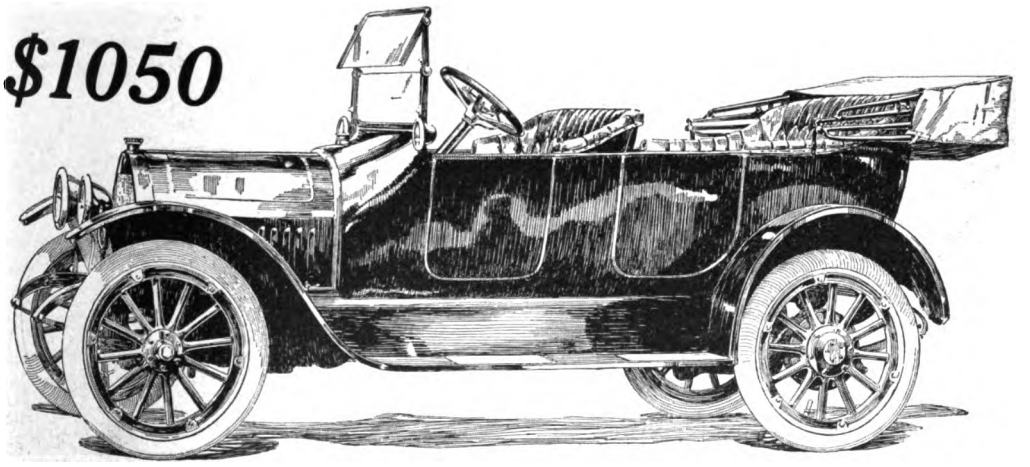
Headlights are Gray & Davis's best quality parabolic lamps.

The windshield is of new design, ventilating, clear vision and rain vision.

Rims are detachable demountable, with one extra rim and tire carriers at the rear.

Electric horn, robe rail, and tool box are also furnished with the "four."

$1050



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Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

Write for brochure of reproduced photographs.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.

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"American" Axles

An Ideal Mounting for That Form of Worm Drive Which Has Been Universally Accorded First Place



In every field of industry there is one acknowledged leader, by which all others of its type are judged.

The Lanchester-Daimler Worm Drive holds this enviable position among gears of its class, because its superior efficiency is not a mere claim, but the verdict of expert engineers, based upon exhaustive practical tests covering many years of service.

Since we secured the sole American rights as axle manufacturers to this gear—some two years ago—we have actually added to the wonderful efficiency which it displayed abroad, through the perfection of mounting which "American" Axles have given it.

By offering manufacturers of high grade gasoline or electric pleasure cars the option of the Lanchester-Daimler Worm Drive, or our own Bevel Drive Axle, we doubled our opportunity for service just when the worm drive became the most important subject connected with automobile construction.

The Lanchester-Daimler Worm Drive, mounted in a full-floating "American" Axle and fitted throughout with the finest of foreign made ball-bearings is, therefore, a unit whose every part has been conclusively tested, and which in its complete form is, we believe, the best axle of its class in the world.

The adjusting and full-floating features of American Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Know These Springs By This Trade Mark

RESILIENT Detroit Springs

Look for the Lubricating Cup near End of Each Leaf

SILENT = SELF-LUBRICATING

The *Extra* Quality of Detroit Springs *pays.* It pays *us*—in steadily increasing good will on the part of the motoring public and car manufacturers. It pays the *car manufacturer* in the reputation it gives his car for easy riding. It pays the *motorist* in comfort, in safety.

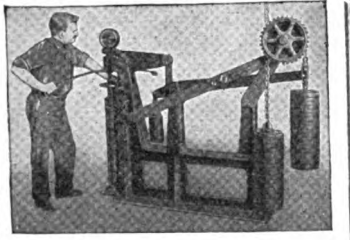
Extra quality pays. More than that, we do not exaggerate when we say that this extra quality of Detroit Springs is the *only* quality you car owners can afford to buy. It is the only quality which car manufacturers dare choose for their machines.

Less than the extra quality of Detroit Springs is a compromise with discomfort, a compromise with the needless wear of expensive mechanism through jolt and jar, a compromise with the positive danger to life and limb from broken springs.

The Life of the Car—Its Comfort—Safety—Service—Depend on the Springs. So *specify Detroit Springs*—demand them on your car for their extra safety, comfort and long service.

Naturally, springs made to the D. S. P. Standards cost the automobile maker more. But the insurance against accidents alone is worth it. An additional income is the saving in repairs to car and tires. No conscientious manufacturer ignores such powerful aids to the prestige of his car and the satisfaction of his customer.

Consider the increased comfort. You must realize that both tires and upholstery are stripped of a large measure of their value unless assisted by resiliency such as Detroit Springs afford.



THIS man is testing Detroit Springs for hardness. Every individual leaf of the Detroit Spring on your car has passed this test successfully. Two other crucial trials of entirely different characters are required before the springs are entitled to their position as guardians of your safety—factors for your comfort and the long life of your car. Write for the booklet that explains these tests and the interesting processes that lead up to them.

Get the Springs Guaranteed for Two Years. Our positive two-year guarantee to the car maker covers the replacement of every Detroit Spring, either broken or settled, delivered to us f. o. b. Detroit. This guarantee protects you against defective material or workmanship for two years from the date of manufacture stamped on the short leaf of each spring.

We are safe in so doing. Our tests assure us that the Detroit Springs you get will outlast the guarantee. Before they leave the factory they have passed through strains that your car never can equal. The "Initial Test," the "Hardness Test," the "Capacity Test," condense years of shock and stress into a few days.

Forty-eight processes have preceded these tests. Every process is managed deliberately, scientifically, by the masters of spring making we employ. That's why Detroit Springs pass our factory tests and the car owners' road tests with strength, elasticity and endurance to spare.

Silent, permanently resilient, self-lubricating. The new feature of Detroit Springs, the Self-Lubricating Device—patents pending—ends the dark ages of squeaking, noisy springs. Distributing cavities at end of each leaf are filled with long-lived lubricant. This lubricant feeds with every movement of the spring leaves. They slide upon each other, easily, silently.

Write for Free Booklet —the story of the entire process of manufacturing these *extra quality* springs and the tests that prove them.

Detroit Steel Products Co., 2258 E. Grand Blvd., Detroit, Mich.

Manufacturers of Fenestra Solid Steel Windows—"The Standard of Industrial Daylighting"

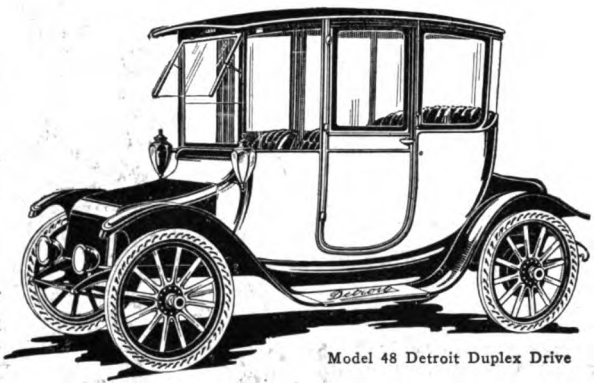


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THE Detroit ELECTRIC

1914 FEATURES:

Choice of worm or bevel gear
Detroit Duplex Drive
Electric Hand Brake
Longer Wheelbase
12 ft. Shorter Turning Radius
Larger Tires
Larger Brakes
Increased Battery Capacity (Washing Unnecessary)
All battery cells accessible by raising hoods
Hanlon Patented Rain Vision Wind Shield
More exclusive appointments
Deep Turkish Cushions



Model 48 Detroit Duplex Drive

DEALERS: Your Detroit Electric Sales Are Not Limited

80% of all electric car owners belong to the well-to-do "middle class" of American families. They drive no other car. Their electric is the family car in constant use from early morning till late at night—winter and summer.

The popularity of the electric is gaining ground daily and **sales possibilities are unlimited.**

Detroit Electric Agency Openings Becoming Scarce

Now—not next year—is the time to get into the electric automobile business right. We have a few cities open. They will not be open long. We want the best dealers in these cities. As a class Detroit Electric dealers represent the most substantial men in their respective communities. This type of men we want in **every** city. Only **permanent** representation is desired. We are in position to furnish such dealers sales helps of an unusual character, drawn from years of experience in every part of the country.

Large Volume Lowers Prices

For 1913 Detroit Electric dealers sold **double** the aggregate number of pleasure vehicles that the dealers of any other manufacturer sold. Our plans for 1914 are on a still larger scale. Our large volume enables us to make **better** cars than ever and to sell them at **less** money than ever. A small volume would make it necessary—with the improvements we have added for 1914—to list our cars at from $350 to $400 more than our 1914 prices.

Keep in mind the fact that we build the finest electric cars made and then compare the following prices with those asked elsewhere:—

1914 Detroit Electric Prices:

With Bevel Gear Axle		*With Worm Gear Axle*	
Victoria	$2300	Gentlemans' Roadster	$2500
4-pass. Brougham Rear Seat Drive	2550	4-pass Brougham Rear Seat Drive	2850
5-pass. Brougham Front Seat Drive	2800	5-pass. Brougham Detroit Duplex Drive	3000

(Prices f. o. b. Detroit)

If our policy of doing business appeals to you as being right, and offering the greatest possibilities for the future, we should be glad to hear from you. Gas car dealers or electric car dealers handling other lines are invited to get in touch with us.

ANDERSON ELECTRIC CAR COMPANY, Detroit, U. S. A.

Builders of "The Detroit Electric"

Largest manufacturers of electric pleasure vehicles in the world

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THE ATTERBURY LINE

HOW are you going to know what size truck is best adapted to the needs of the business houses in your territory? Even if you are shrewd enough to size up the situation and pick out a truck which more nearly fits the majority of business requirements, isn't there a lot of business you will have to pass up because of your inability to furnish a truck of the proper size to give the most economical results? We are putting this matter to you for your judgment to decide.

Do you want to handle a certain line of heavy-duty trucks and a different line of medium or light-duty trucks? Can you do justice to either line and, more important, can you do justice to your customers when you boost a certain type truck for one class of hauling and a different type of truck for another class of hauling? Do you think the Average American business man is not keen enough to see the fallacy of such a policy? And do you think your arguments will bear sufficient weight to sell a truck, when for one set of conditions you are forced to advocate one kind of construction, hitch-up, motor or rear-end and for another set of conditions you are forced to advocate an entirely different hitch-up? Can you not see the value of selling a complete line which comprises all sizes from 1,500 pounds to five tons?

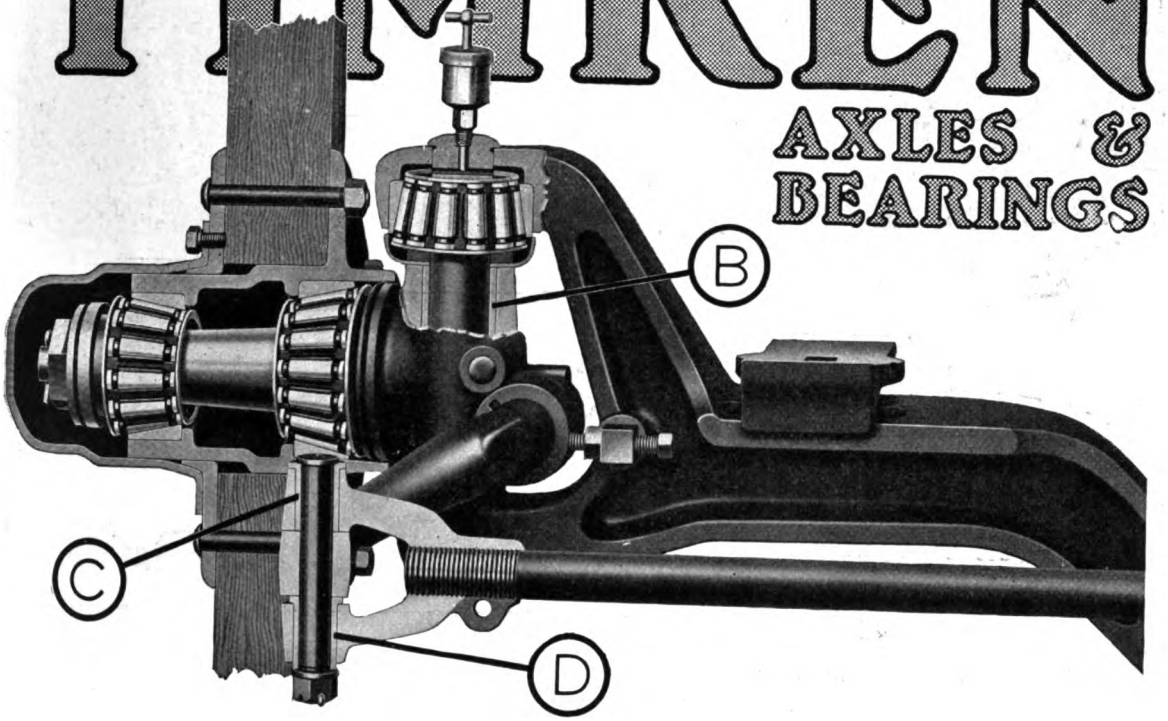
There is no complete line of trucks manufactured in America today that can compare favorably with the Atterbury line, motor for motor, chassis for chassis, rear-end construction for rear-end, etc.

Get in touch with us before deciding, let us send you our dealers' proposition and all information about the Atterbury Line before you decide.

The Atterbury Motor Car Company, Buffalo, New York

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TIMKEN
AXLES & BEARINGS



Axles That Never Wear Out

MOVING parts of axles, like moving parts of anything, will wear in time. There is no exception to this rule, but—

In the Timken-Detroit Front Axle the moving parts—every one of them—are either Timken Roller Bearings or hardened and ground steel bushings or pins.

These bearings, bushings and pins wear very slowly. Timken Bearings are adjustable to take up the slight wear and Timken-Detroit Bushings and Pins are easily replaceable when worn sufficiently

So the axle may truly be said to never wear out.

Take the front axle spindle. No wear comes on it because nothing moves on jt. Slight wear does come on the cones, cups and rollers of the two bearings. These are Timken Tapered Roller Bearings that offer greatest resistance to wear and are adjustable to offset the effects of wear when it comes.

Same thing is true of the steering knuckle pin. At the top, to sustain the great weight, is a Timken Bearing. Below, where pressure is less but where there is some motion, there's a hardened steel bushing. It is made of good steel, is heat-treated, hardened and ground to size so it wears very slowly.

And when it does wear can be replaced easily, quickly and cheaply. Because Timken Bushings are accurate to the thousandth part of an inch, they are interchangeable. A new one will fit without any tinkering.

Look at the bushing "B" in the picture. The pin is keyed into the steering knuckle in which this bushing is pressed. There's no turning of the pin in bushing "B." Then why have a bushing at all?

To make a tight fit so there'll be no pound from the constant vibration. Not one little point like this is overlooked in Timken-Detroit design.

Note the bushings in the cross-rod yoke (C and D). Due to spread of yoke the pressure is kept low and when wear comes here it must come on hardened pin and bushings that are replaceable at low cost. They, too, are accurate and interchangeable.

Of course Timken-Detroit Axles are strong enough, and to spare, for the loads they are designed to carry. And for the emergencies of motor-truck and pleasure car service. They are standing up under thousands of commercial and pleasure cars made by the leading builders.

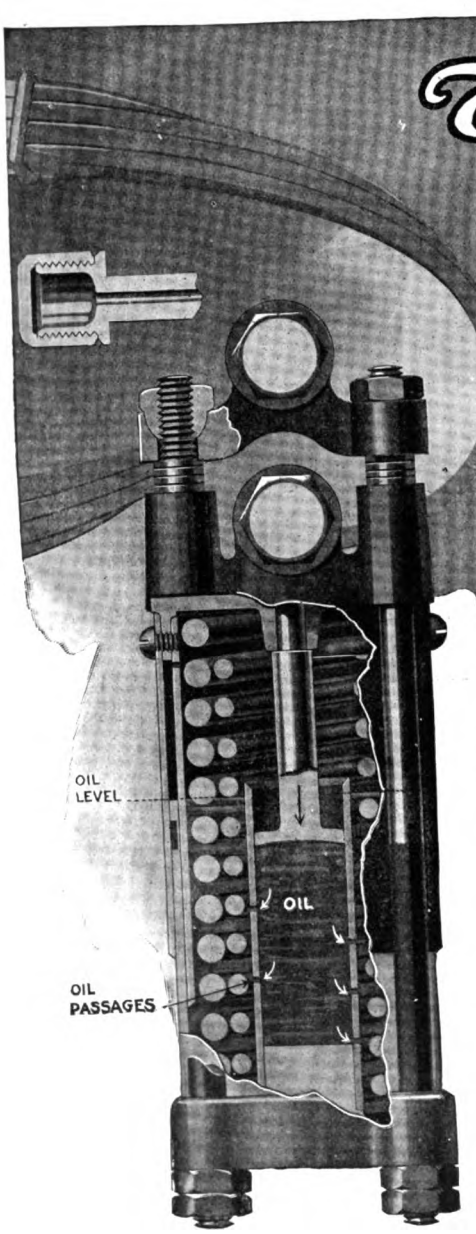
When every other part of those cars is worn out, new pins, new bushings, perhaps a new bearing here and there will fit them for another lifetime of service under another car.

A 52-page booklet, "The Anatomy of Automobile Axles," sent free, postpaid on request, tells the story of the axle in an interesting human way. Write for it.

(401)

THE TIMKEN-DETROIT AXLE CO.
Detroit, Michigan

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The A.V.

(AVERMERSCH) & CIE

The Small, Compact, Efficient, Hydraulic-Spring SHOCK ABSORBER

"Made like a gun" *"Rides like a motor boat"*

At last a hydraulic-spring shock absorber that is only 6 inches high and produces the maximum of car economy and comfort.

The A.V.

(A. Vermersch & Cie.)

Shock Absorber

Front and Rear

For both pleasure cars and commercial vehicles. A combination of the best features of hydraulic and spring shock absorbers, together with the most advanced improvements.

$35 to $55 Per Pair

Made in France and sold with remarkable success throughout Europe.

We are arranging exclusive agents in each town and city. Write or wire while the opportunity is open.

HUDSON EXPORT & IMPORT CO.

140 West 42nd Street **NEW YORK CITY**

RHINELAND MACHINE WORKS CO.
1254 Michigan Avenue, CHICAGO, ILL.
650 Woodward Avenue, DETROIT, MICH.

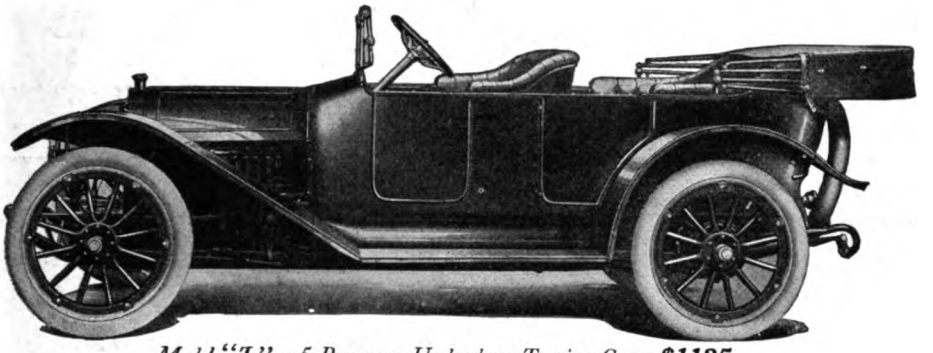
JOHN V. WILSON COMPANY
1424 Vine Street, PHILADELPHIA, PA.
220 Motor Mart, BOSTON, MASS.

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Regal

Rushmore Electric Lighter and Starter

Left Hand Drive—Center Control



Model "T"—5 Passenger Underslung Touring Car—$1125

Scientific Care of Every Detail— Secret of *Regal Quality*

THE New Series of Regal Cars has increased our reputation as builders of automobiles of quality. This fact is now recognized by dealers and consumers the world over.

And the secret of Regal Quality is—*scientific and conscientious care in the construction of every single detail.* Thus, perfect details result in pefect Regal Cars—automobiles of utmost efficiency, long-life, power, beauty and economy.

The new Regal Cars are *finished products*—complete in every detail of mechanical construction and body beauty. They actually *look like* cars costing $2000 or more because of their refinement features and external appearance.

Every desirable advancement is found in these new cars. No more motor car value can be purchased anywhere this year for such prices.

Values Offered You—

We have incorporated the efficient and positive Rushmore Electric Starter and Lighter as standard equipment on all Regal Cars. The desired left hand drive and center control have been adopted. Other features of our standard equipment are: Electric headlights, with dimming attachment. Long, low, sweeping body lines with cowl dash. Starter, lighting and speedometer switches on instrument board. Special adjustable curtains. Rain vision and ventilating windshield. Demountable rims. Tire irons. Foot throttle and muffler cut out.

The New Series—

Our New Series includes Model "T", a large and beautiful 5-Passenger, underslung, touring Car at $1125—Model "N," an efficient, speedy, underslung roadster, $1125—Model "NC," an elegantly finished and appointed, underslung coupe selling at $1600 and Model "C," a big, powerful, 5-passenger overhung car for $1350. The underslung values of extreme safety, economy and beauty are developed to the highest point in our Underslung Models.

Dealers—Write Today

We desire wide-awake, aggressive dealers in certain territory still open. You may be just the right man. We give our dealers excellent co-operation and unusual factory service. Write or wire us for our New Series Literature, *with complete specifications and prices*, and our attractive dealers' proposition.

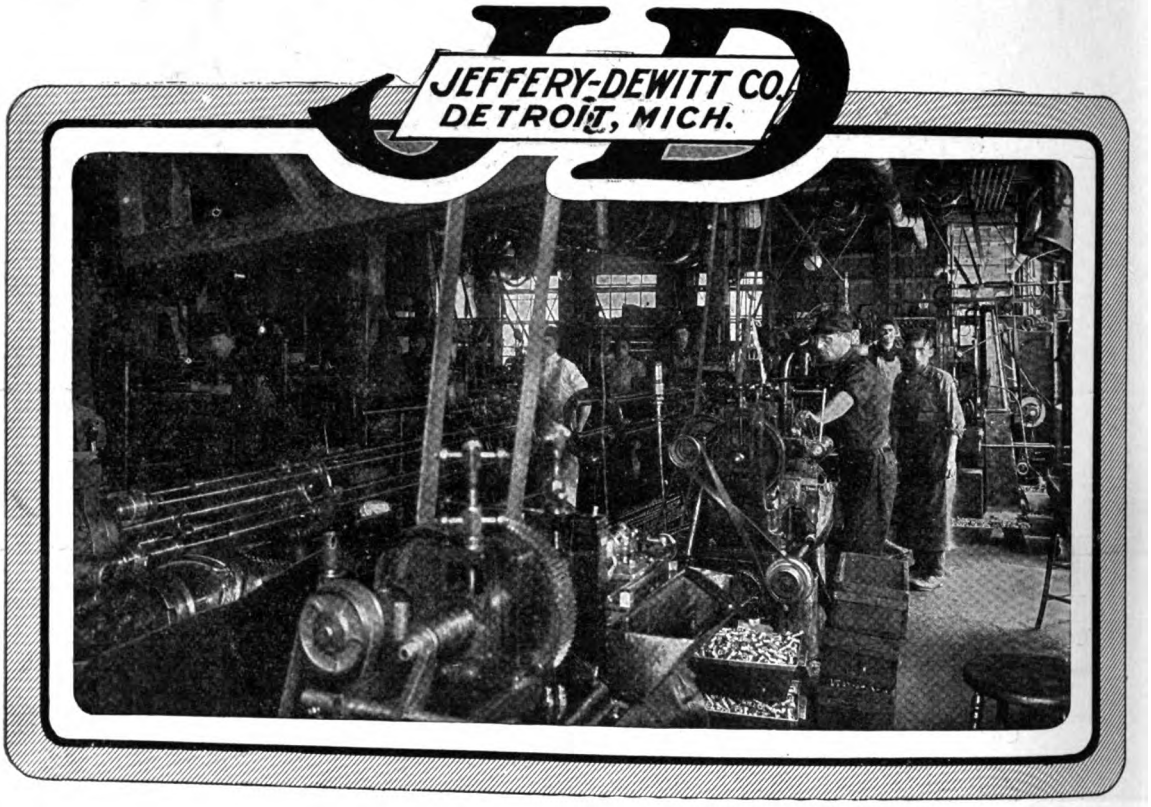
Literature sent to prospective purchasers on request.

Regal Motor Car Co. 263 Piquette Avenue, Detroit

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Jeffery-Dewitt SPARK-PLUGS in the Making

Scene V. Screw Machine Department. A battery of 4-spindle automatics is shown working upon four bars of stock at one time turning out bushings and shells.



THIS 75-CENT PLUG ESPECIALLY
IS THE SALVATION OF ALL OILY MOTORS



Petticoat Plug, with closed end and central electrode of special alloy.

It is the ***J-D*** Petticoat with closed end of improved design, which not only adds stability to the entire plug, but **makes it especially desirable and serviceable where an excess of oil is used.**

Besides, the porcelain is made in the Jeffery-Dewitt potteries of imported clays blended by a secret process. It will withstand any voltage.

FOR FORD CARS

this plug is almost a necessity, guaranteed not to foul or crack. It gets all the good out of the motor. Send for our free handbook of ignition, which also describes the whole ***J-D*** line—a plug for every type of motor.

JEFFERY-DEWITT CO.,

65 Butler Avenue **Detroit, Mich., U. S. A.**

Largest Makers of High Grade Plugs in the World

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"AS SURE AS THE WHIRL OF THE WORLD"

WOMEN WON'T WORRY



AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

Women won't worry if their cars are equipped with Auto-Lite starting motors and lighting generators. They are an open-sesame which removes the last obstacles from the pleasant and successful operation of gasoline motor cars by women—eliminating muscular effort and placing completely within their control the most powerful machines.

The Auto-Lite Starting Motor will turn an average engine faster than 100 revolutions per minute; compelling positive starting.

The Auto-Lite Generator, automatically, furnishes an abundance of electric current—enough to charge the storage battery and keep the lamps burning brilliantly.

Every Owner Should Have This Book

"Handbook on Care and Operation of Modern Electric Systems" so full of interesting information on all modern electric systems that no automobile owner can afford to be without it Explains, in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems. The large operation chart which it contains is alone worth the price. Regular price, 50c. Will be sent to you for 10c. in stamps if you use this coupon.

"The Pioneer Makers of the 6-volt Electric System"

THIS COUPON SAVES YOU 40c.

The Electric Auto-Lite Co.
116 Michigan St., Toledo, Ohio

Enclosed find 10c. in stamps for which please send me your handbook.

NAME_____

ADDRESS_____

THE ELECTRIC AUTO-LITE COMPANY

TOLEDO, OHIO, U.S.A.

BRANCHES

NEW YORK KANSAS CITY SAN FRANCISCO DETROIT

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"Two Years Ahead"—

This is the opinion of a prominent official of the Ford Motor Company after he had examined carefully the Kelly water-cooled models.

As a result, the Ford Company purchased two three-ton Kellys—making a total of four Kellys now in use at the Detroit plant. These purchases were made after carefully looking over every truck of national repute.

The Dayton Engineering Laboratories Company (Delco) just bought a three-ton Kelly for its Dayton factory.

These companies know the best truck when they see it. Do you?

DEALERS!
There is still some desirable Kelly territory open. Write for our agency proposition.

The Kelly-Springfield Motor Truck Company
1038 Burt Street, Springfield, Ohio

(65)

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FISK Tubes

FEW DEALERS need to be told anything about the quality of Fisk Tubes. They are famous in the trade as **the pure gum tubes** that can be carried in stock for a long time with no sign of deterioration.

They are pure Para rubber, vulcanized ***right*** and spliced ***right.*** There you have the whole secret as to why the same tube is often used year after year in practically continuous service.

No argument is needed to prove the superiority of a pure gum tube over a compounded one. Why not sell Fisk Tubes and give your customers the benefit of your knowledge and experience?

Write Department 23 for Fisk Dealer Proposition

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 40 CITIES

Digitized by Google

Inefficiencies of bolted-up parts may be due to looseness of fit, frictional wear, movement of bolt or nut, or elongation of bolt.

ALL THESE INEFFICIENCIES CAN BE OVERCOME BY A PROPERLY DESIGNED SPRING WASHER. The Hunt Test, full details of which were given in our advertisement of May first in this publication, proved conclusivoly and finally that a properly designed spring lock washer will prevent elongation of bolt, prevent nut movement and compensate for frictional wear.

The prevention of frictional wear depends entirely upon the SPRING POWER of the lock washer.

Considering these facts—and they ARE facts—you will be quick to see that the purchase of the RIGHT SPRING LOCK WASHER involves far more of discrimination than is usually practised.

And that the securing of nut lock washers of proper section, proper analysis and proper heat treatment is a matter of extraordinary importance.

After reaching this inevitable conclusion, you will naturally be interested in the nut lock washers, the tests of which have furnished the only positively scientific data available.

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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The lighting facilities of this car are strikingly original

CONCEALED under a cornice shading the mahogany instrument board of all KisselKar models is a row of miniature electric lights which at night completely illuminate not only the meters, switches and other instruments, but also the floor of the front compartment. This is a late KisselKar innovation that will be fully appreciated.

And the idea of convenient illumination is carried still further—a rear "bull's-eye" in the side lamps sweeps the running boards, and a similar device in the tail lamp shines directly on the gasoline gauge.

KISSELKAR

The KisselKar has a powerful, easily accessible, long stroke motor capable of developing plenty of excess power. It is silent, smooth running, flexible and responsive to every demand. There is no better motor under the hood of any automobile at any price.

KisselKar comfort is built into the car, not added onto it. It is due to the extra liberal wheelbase, big wheels and tires, big resilient springs, roomy tonneau and extra deep seats. In the things that "count" the KisselKar is always "there."

There are three sizes—the 60 H. P. "Six" at $3150, the 48 H. P. "Six" at $2350 and the 40 H. P. "Four" at $1850. All KisselKars are fully equipped, electric lighted and started; left hand drive, center control.

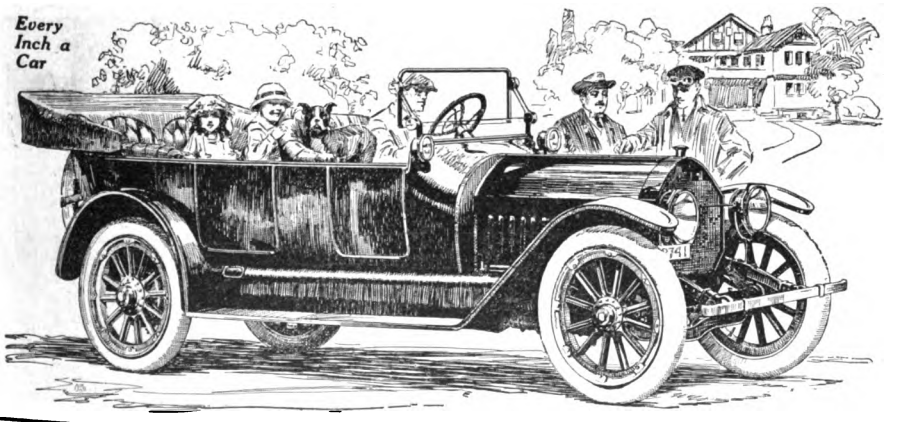
Illustrated Catalog on Request

KisselKar Service Contract—KisselKar Service offers owners an exceptionally efficient system of permanent cooperation that forestalls trouble and keeps the car always "up to the mark." The exact scope of this service is stipulated in the written KisselKar Service Contract.

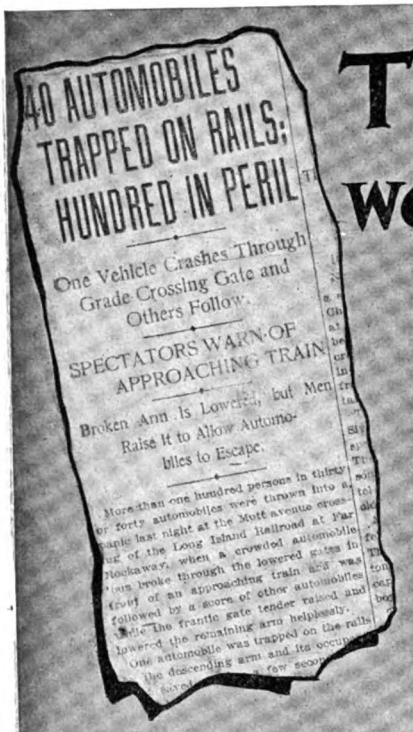
KISSELKAR TRUCKS—Six sizes, 1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Ask for Truck Catalog

Kissel Motor Car Co., 159 Kissel Ave., Hartford, Wis.

BOSTON, NEW YORK, CHICAGO, MILWAUKEE, KANSAS CITY, MINNEAPOLIS, ST. PAUL, DALLAS, SAN FRANCISCO, LOS ANGELES, OAKLAND, Philadelphia, Detroit, Houston, El Paso, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Cincinnati, Newark, Montreal, Quebec, Toronto, Winnipeg, Calgary and 300 other principal points throughout America.



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40 AUTOMOBILES TRAPPED ON RAILS; HUNDRED IN PERIL

One Vehicle Crashes Through Grade Crossing Gate and Others Follow.

SPECTATORS WARN OF APPROACHING TRAIN

Broken Arm Is Lowered, but Men Raise It to Allow Automobiles to Escape.

More than one hundred persons in thirty or forty automobiles were thrown into a panic last night at the Mott avenue crossing of the Long Island Railroad at Far Rockaway, when a crowded automobile ran broke through the lowered gates in front of an approaching train and was followed by a score of other automobiles. While the frantic gate tender raised and lowered the remaining arm helplessly. One automobile was trapped on the rails, the descending arm and its occupants [illegible]

These Brakes were Insufficient

SHELDON

MEANS CERTAINTY

Pages and pages have been written about the safety of this or the necessity of that accessory or equipment on a motor vehicle but in the last analysis the entire efficiency of that vehicle depends upon ITS BRAKES.

The safety of the truck, the operator, and the public is no more certain than the strength of those brakes. Over treacherous grade crossings—down winding hills—through congested city traffic—what does a driver depend upon to a greater extent than the brakes? Yet it seems that the average buyer pays very little attention to this vital factor in a motor vehicle.

You should know that SHELDON BRAKES offer the utmost protection that it is possible to obtain.

You should know that SHELDON BRAKES are as nearly infallible as hand, brain and machinery can make them. The most dangerous courses anywhere have no terrors for a SHELDON-EQUIPPED car.

Every SHELDON BRAKE bears the mark of perfection before it leaves our factory.

Primarily its design is the most efficient in the world. SHELDON 3-ton brakes will skid the wheels with a 4½-ton load on a 30% grade. Its thoroughness in the matter of materials and construction is so sufficiently well known to engineers that to most of them "SHELDON" is synonymous with "SAFETY."

You can do no better than to specify SHELDON DOUBLE BRAKE REAR WHEEL EQUIPMENT.

Then you'll be certain that YOUR TRUCK IS SAFE—ANYWHERE—EVERYWHERE—ALWAYS.

The SHELDON Brake Equipment *is Supreme*

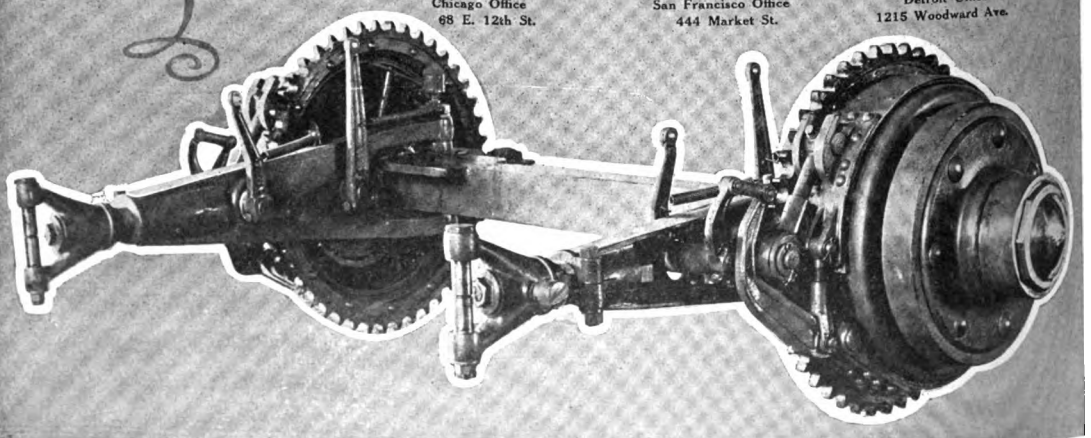
SHELDON AXLE CO.

WILKESBARRE, PA.

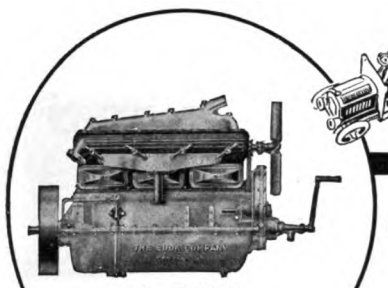
Chicago Office
68 E. 12th St.

San Francisco Office
444 Market St.

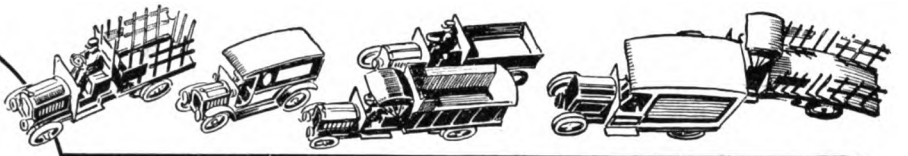
Detroit Office
1215 Woodward Ave.



Digitized by Google



Model "SS"
Buda "Little Six"





More Buyers Every Day Insist on BUDA MOTOR

"THE PART THAT SELLS THE CAR"

Modern complexity has brought into being the *Specialist.* Each "thing" we make is really a combination of many things, each of which may be a life work.

An Author writes a "book"—really a bundle of manuscript. He's a *Specialist* in ideas—like an *automobile designer*

He turns the "book" over to a "Publisher" (who is a *Specialist* in the business end of book making.)

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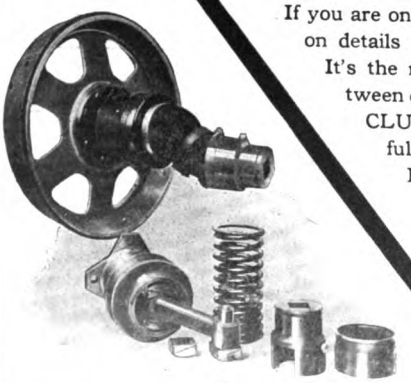
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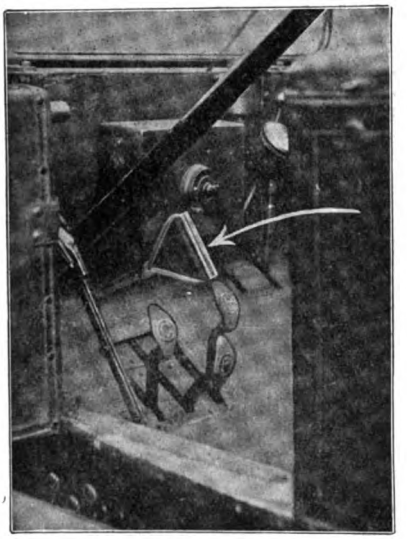
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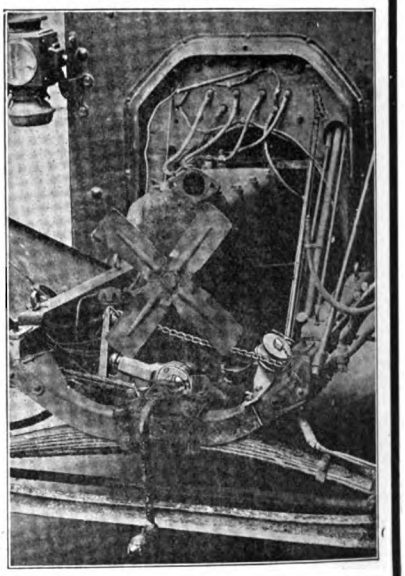
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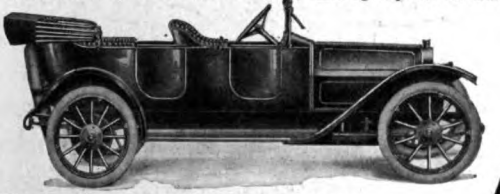
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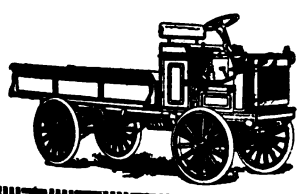
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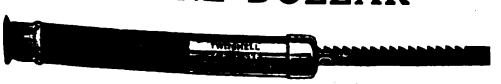
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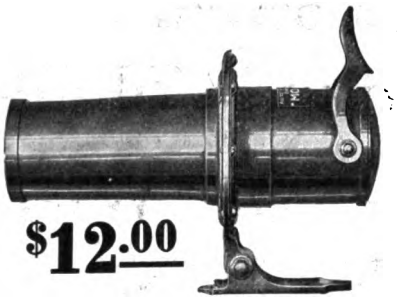


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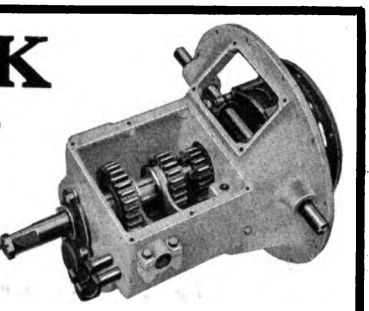
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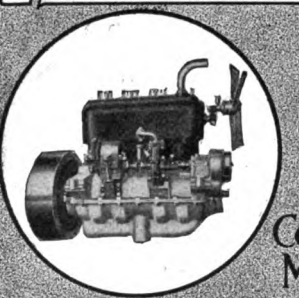
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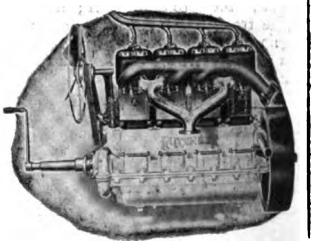
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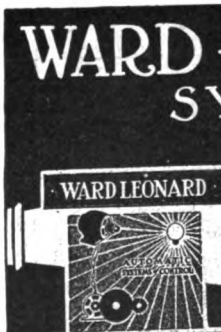
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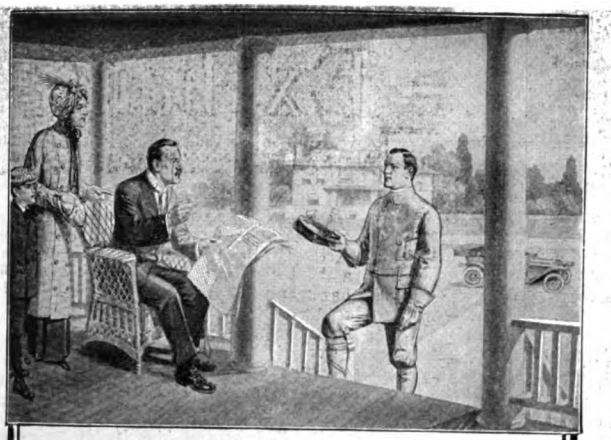
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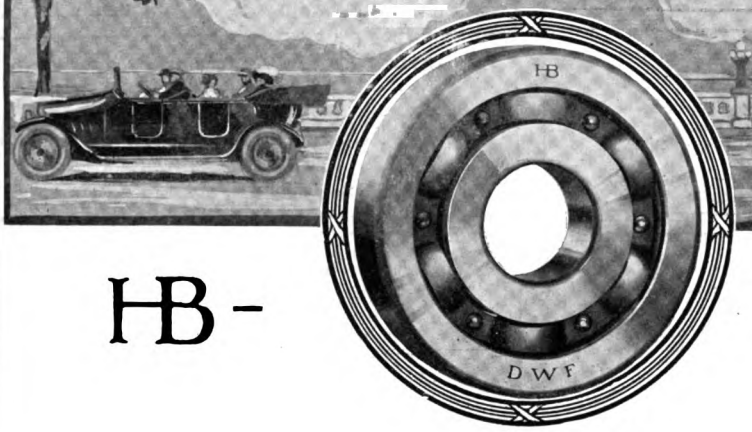
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A Trade Paper Giving the World's Motor News

Vol. XXXVII
No. 97

New York, November 6, 1913

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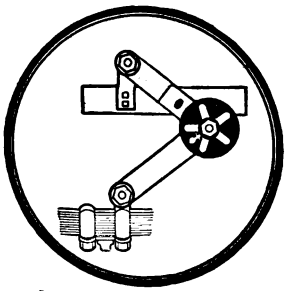
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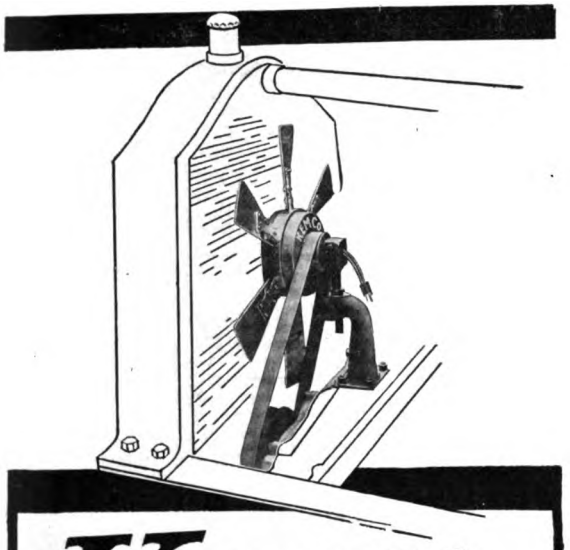
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The Kemco Electric Mfg. Co.
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THE STURDY STUTZ MADE GOOD IN A DAY

Compare the Stutz—Part by Part—with Any Car Made at Any Price

Everybody now insists on full car value for their money—and a *past* instead of a *future* record.

Take Your Time in Making a Selection

No car built has anything on the Stutz for style and beauty, roominess, easy operation, freedom from trouble, low cost mileage, power and convenience.

So don't take snap judgment in buying your next car—give the Stutz the thorough examination it is entitled to receive on account of its **past** and **present** performance.

"My Next Car Will be a Stutz"

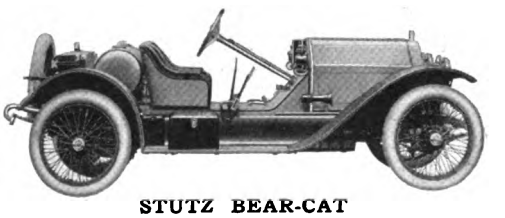
Those that know the Stutz—and it's pretty well known everywhere—not only praise it in the highest terms, but you will find a number who will say, "My next car will be a Stutz."

Go to your nearest Stutz dealer—look at the new models—note that they are even better than the previous Stutz cars. Ask him to show you the exclusive Stutz features.

Write for our New Illustrated Catalog No. A—Series E

DEALERS: We have a little desirable territory still open and will make a profitable contract with responsible dealers. Write or wire quick.

Stutz Motor Car Company of Indianapolis



STUTZ BEAR-CAT
Four Cylinder, $2000 Six Cylinder, $2250

STUTZ — the car that made good in a day

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Completely Equipped

With Gray & Davis electric starter and generator--$1075
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Electric head, side and tail lights
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Brewster green body with light green striping, nickel and aluminum trimmings
Mohair top and boot
Clear vision windshield
Stewart speedometer
Electric horn
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A LARGER percentage of our 1914 output will go to farmers than from any other factory in the world.

This is the strongest guarantee one can have of Overland sturdiness, staunchness and genuine wearing value.

The farmer is the man who buys for mechanical merit.

Literature on request. Please address Dept. 50

The Willys-Overland Company
Toledo, Ohio, U. S. A.

Manufacturers of the Famous Garford and Willys-Utility trucks.
Full information on request.



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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, November 6, 1913 No. 7

MARION FOLLOWS AMERICAN INTO HANDS OF A RECEIVER

Lack of Working Capital and Limited Bank Credits Cause Embarrassments—Assets Exceed Liabilities—Latter $500,000.

Affected by the same influences, lack of working capital and limitation of bank credits, which caused the failure of its near relative, the American Motors Co., the week previous, the Marion Motor Car Co., of Indianapolis, went into the hands of a receiver on Monday last, 3rd inst.

The receivership grew out of proceedings instituted in the State Superior Court by the Kinsey Mfg. Co., of Toledo, O., which was a creditor to the extent of $19,202.65. The receiver appointed, James E. Kepperley, is one of the attorneys for the Marion Motor Car Co., which did not oppose the proceedings. The liabilities of the company, it is stated, will reach $500,000 but its assets, according to reports, will exceed this sum.

The assets and liabilities of the American Motors Co., of which Frank E. Smith, its vice-president, has been named as receiver, have not been made public.

Both factories are being operated and there are those who believe that both companies, of which J. I. Handley is the president, will pull through. It is only three months ago that Handley organized a selling company bearing his name, which was to market the entire production of both American and Marion cars.

Standard Motor Likely to Locate in Iowa.

Instead of locating its plant in Minneapolis, as first was proposed, it now appears a merger of the Minneapolis Motor Co., a builder of motorcycles, and the Colby Motor Co., of Mason City, Ia., will be operated in the latter city, where the Colby factory is immediately available for use.

The Standard company, which was organized some three weeks ago under Delaware laws, with an authorized capital of $6,000,000, has chosen as its president and treasurer C. H. McNider. The other officers are F. E. Kenaston, vice-president; M. J. Scanlon, vice-president; F. E. Stearns, secretary and assistant treasurer. In addition to these men, the directors are F. H. Bowman, P. M. Stearns, S. J. Boal and William M. Colby.

The Standard company will continue the manufacture of both the Colby car and the Minneapolis motorcycle.

Lewis Finds New Name for New Company.

Because the Mitchell-Lewis Motor Co., of which he was president and general manager until February last, objected to the name Lewis Motor Co., which William Mitchell Lewis had selected for his most recent enterprise, he has renamed it the L. P. C. Motor Co., of which he himself is president and general manager. Rene W. Petard is secretary-treasurer and factory manager and E. B. Hand vice-president.

As stated in last week's Motor World, they will build a light "six," of which first deliveries are promised February 1st. For the time being, operations will be carried on in what was formerly a part of the Racine-Sattley carriage and wagon plant in Racine, Wis.

Why Canadian Ford Passed Dividend.

Although its report showed earnings of $1,250,000, most of which was reinvested in real estate and equipment, and though it has a surplus of approximately $1,900,000, the Ford Motor Co. of Canada, at its annual meeting last week, passed its dividend. This action was deemed wise because of the financial stringency existing in a large part of the Dominion. Last year the Ford Canadian company increased its capital from $125,000 to $1,000,000 and declared a 700 per cent. stock dividend, and the two preceding years paid cash dividends of 100 per cent.

CORECEIVER FOR POPE IS SOUGHT BY STOCKHOLDERS

Owners of Large Holdings, with Bank Creditors, Project Selves into Reorganization—Protective Committee is Formed.

Just what lines the reorganization of the Pope Mfg. Co., of Hartford, Conn., will follow has not yet been clearly indicated. The appointment of Col. George Pope, treasurer of the company, as receiver was accepted as meaning that the reorganization will be conducted by the Pope interests, but since that time the larger stockholders and banking creditors have projected themselves into the affair and are endeavoring to have a co-receiver, or co-receivers, appointed to serve with Col. Pope.

The stockholders themselves have formed a protective committee, and when the hearing fixed for November 12th occurs in the Federal Court in Boston they will urge the appointment of additional receivers.

This protective committee is composed of Allan Forbes, president State Street Trust Co.; James L. Putnam, of Putnam, Putnam & Bell, attorneys; Carl Bonny, of Bonny & Moore, Worcester; Daniel W. Gurnet, of Richardson Hill & Co.; George M. Angier, of Angier Chemical Co.; William P. Fowler and Robert M. Currier, of R. M. & C. R. Currier.

It is understood that they are bent on replacing Albert L. Pope as president and general manager of the company, and on making other changes.

On the other hand, the merchandise creditors have formed another and friendlier committee, of which Clarence E. Whitney, of the Whitney Mfg. Co., is chairman. The other members are D. J. Post, Veeder Mfg. Co.; E. J. Lobdell, American Wood Rim Co.; C. A. Earl, Corbin Screw Corporation, and De Witt Page, New Departure Mfg. Co.

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GARFORD-KNIGHT STEPS IN; EDWARDS-KNIGHT STEPS OUT

Willys, Having Purchased Edwards License and Other Assets, to Build New Car in Own Factory—Retains Designer Edwards.

Reports that the Edwards Motor Car Co., of New York, purposed removing to the West, which had been afloat for several months, proved not wholly correct, for, instead of removing, the company has been swallowed whole by John N. Willys, president of the Willys-Overland Co., of Toledo. He has acquired the Knight license and the entire stock and equipment of the Edwards company and will produce a Knight-engined car in the Garford plant in Elyria, O., which car will be known as the Garford-Knight. H. J. Edwards, the designer of the car and vice-president and general manager of the company, has been retained and will go to Elyria in the capacity of chief engineer to direct the production of the new Willys car.

The Edwards company was incorporated in July of last year, under the laws of Maine, with a capitalization of $2,000,000, Edwards and C. G. Stoddard, formerly of the Stoddard-Dayton establishment, being the chief parties involved. The car was an impressive, $3,500 creation, but the company made small progress with its cars and even less progress with its Knight-engined trucks, which it aimed to produce in a factory in Louisville, Ky., which it was stated it had acquired. Its absorption by Willys, therefore, will cause comparatively small surprise.

During most of its short life, the Edwards company maintained an office and salesroom in New York in the United States Rubber Co.'s skyscraper, where it occupied most of the fourth floor. This upstairs salesroom, a commodious and magnificently appointed place, caused many tradesmen to shake their heads, for it was in the nature of a bold experiment, and that it did not pan out is about what every one expected. Few persons ever found their way to it.

Rajah Now Goes After Rex Ignition.

Claiming that the Rex Ignition Mfg. Co., of New York City, has been selling porcelain parts to be used in Rajah spark plugs, the Rajah Auto Supply Co., of Bloomfield, N. J., filed suit this week in the United States District Court for the Southern District of New York, sitting in New York City. The Rajah company asks an injunction restraining the Rex company from continuing this practice, which it charges is a violation of the restrictive license under which Rajah plugs are sold. The plugs are manufactured under the David B. Mills patent, No. 825,856, granted July 10, 1906. The Rajah company has secured similar injunctions against other companies.

"Clink of Gold" Plant Again for Sale.

For the fourth time, what last was the plant of the Ohio Falls Motor Co., of New Albany, Ind., will be offered at public sale on Wednesday, November 26th. When it was put on the block several months ago, it was bid in by officers of the embarrassed company, but they failed to consummate the transaction and the court, therefore, has ordered a resale.

The property, which originally was acquired by the more or less famous "clink of gold" stock-jobbing American Automobile Mfg. Co., comprises about six acres of real estate, several brick buildings and considerable equipment. It is subject to encumbrances of about $26,000 and, according to the order of the court, no bid for less than $15,000 cash will be considered.

Willys Acquires Interest in R. & L.

Presaging an enlargement of the business of the R. & L. Co., of New York City, and its taking on of the Willys Utility wagon, John N. Willys has purchased an interest in this Garford distributing corporation; his purchase, however, does not constitute a controlling interest, and both J. T. Ranier and Paul Lineberger will remain, as heretofore, the active principals in the business.

The R. & L. Co. recently erected a service station in The Bronx and has been active in pushing the sale of both Garford cars and trucks in the metropolitan district, and the extension which is contemplated is planned to care for the distribution in the metropolitan territory of Willys's light delivery vehicle.

Waldon and Budlong go to Europe.

S. D. Waldon, vice-president of the Packard Motor Car Co., and M. J. Budlong, manager of the Packard branch in New York, sailed to Europe last week. While they will not close their eyes to automobiles, in the case of Budlong, at least, the jaunt is one of recuperation, his health of late not having been of the best.

Indianapolis Dealers Oppose Local Show.

There will be no local show in Indianapolis next year. This was decided at a meeting of the Indianapolis Automobile Trade Association on Thursday last. Instead of a show, the dealers will hold "open house" during one week of February and have in view the adoption of a uniform style of decoration.

THREE SUITS IN ONE WEEK FALL UPON MANSFIELD TIRE

Total of Trio Amounts to $45,000—Two Grow Out of Tire Building Deal—Third Results from Contract for Crude Rubber.

When a manufacturer has a lawsuit filed against him he generally is supposed to worry. If so, the Mansfield Tire & Rubber Co., of Mansfield, O., may have worried a little this week, when the Automobile Tire Co., of New York City, filed suit against George W. Henne, the Mansfield vice-president, for $10,000.

And if the company worried a little, it doubtless worried some more when the Automobile Tire Co. instituted an action against the Mansfield company itself for another $10,000. And if the company worried a little more at this second suit, it more than doubled its worry when J. H. Rossbach & Bros., of New York City, appeared with a suit for $25,000, making the week's calamities total $45,000.

All three suits were filed in the Supreme Court for New York county. While the Mansfield side of the disputes has not yet meen made a part of the court record, it is stated that the rubber manufacturer has its own story of the disagreements.

The two actions instituted by the Automobile Tire Co. grew out of a contract under which the Mansfield company makes tires for the Automobile Tire Co. The manufacturing concern is in possession of dies belonging to the tire company, and the dispute in question grew out of an alleged failure of the Mansfield company to deliver tires as fast as the Automobile Tire Co. wanted them. Since all its dies were in the Mansfield factory, the plaintiff claims its business was damaged by this failure to deliver. But there is a Mansfield side to the question, and the court must decide the dispute. While the $10,000 suits against Vice-President Henne and the company grow out of the same transaction, they are entirely separate actions.

The Rossbach suit is the outgrowth of a crude rubber contract. The Rossbach concern, which is made up of Jacob, Leopold and Max J. H. Rossbach, is a skin and hide concern but took a little dabble in crude rubber, contracting to deliver a specified quantity per month during 1912 and 1913 to the Mansfield company at 90 cents a pound. Whether a drop in the price of rubber had anything to do with it is not apparent, but following a decline below 90 the Rossbachs claim the Mansfield company repudiated its contract. The damages are estimated at $25,000.

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SELLING GASOLENE MAKES GARAGE OF SUPPLY STORE

Buffalo Court Refuses to Permit Supplyman to Operate Without Garage License—Hinges Decision on Sale of Gasolene.

If the opinion of Justice Charles B. Wheeler, of the Supreme Court for Erie county, New York, holds good the question of whether a supply store or garage sells gasolene has much to do with whether it comes within the legal definition of a public garage. Justice Wheeler last week placed a supply store in the garage class, although the only reason for so doing, he said in discussing the question, was that the supply store sells gasolene.

The question came up when Charles R. Fish, who already operates one supply store at Cold Spring, wished to open another in Buffalo, at Massachusetts, Rhode Island and 15th streets; he applied to Commissioner of Public Works Ward and was directed to apply to the Common Council, which body alone has permission to issue garage permits. He refused and asked for a writ of mandamus compelling the commissioner to license his supply store, but the writ of mandamus was refused.

Justice Wheeler points out that the only question in the case is whether or not the proposed building is to be deemed a public garage. It was conceded that the building was to be used for supplying motor vehicles with gasolene and that a certain amount of gasolene was to be stored on the premises. He quoted with the ordinance language these words: "Or otherwise caring for motor vehicles of any kind for profit."

He held that supplying motor vehicles with gasolene is "otherwise caring for them," and added that a manifest purpose of the ordinance is to guard against the danger incident to surrounding property from the storage and sale of gasolene. He said that the section should be construed so as to carry out the general purposes of the chapter, and that with this in mind he had little hesitation in reaching the conclusion that the proposed structure should be deemed a public garage; that the words, "otherwise caring for" motor vehicles, mean something besides "storing, cleaning or repairing" them.

Marmon Made Honorary Member of I.A.E.

Fulfilling promises made at the joint meeting of the Institution of Automobile Engineers of England and the Society of Automobile Engineers aboard the steamer City of Detroit III, June 4-7, President Howard Marmon, of the American organization, has been unanimously elected an honorary member of the British institution. Marmon's election carries with it double honors, as he is the first man to be elected an honorary member of the I. A. E.

Ewing Lists Debts of $590,540; Assets $400.

L. E. Ewing, who organized several automobile enterprises, of which the Findlay Motor Co. was the last one, filed a voluntary petition in bankruptcy in the Federal Court in Cleveland, O., on Thursday last, 30th ult. He places his liabilities at $590,540 and his assets at $400.

Of the debts, $190,000 are due crediters of the Findlay Motor Co. Another large portion of the liabilities are the result of a guaranty and bonds furnished for the New York Mail Co. to the Federal government to insure the transportation of mails in New York City. One of the bonds, for which Ewing and others gave indemnity, amounts to $150,000. There is also due to A. H. Ewing, of Gates Mills, O., $42,500 for money borrowed.

Ewing started out to do big things in the automobile industry and got so far as to merge a Lockport (N. Y.) truck company with his own project in Findlay, but ill luck dogged his footsteps and none of his ventures panned out properly.

Velie Discontinues Retailing in Boston.

The Velie Motor Vehicle Co., of East Moline, Ill., has discontinued its branch in Boston, as the Velie car hereafter will be handled by an agency. The Velie people, however, will maintain an office and wholesale storeroom at 16 Amherst street, Cambridge, which is across the river from Boston.

Wilson Forms Tire Company in Jersey.

With J. C. Wilson as president, the India Rubber Co. has been organized in New Brunswick, N. J., for the purpose of producing tires. The other officers are Charles A. Hunter, vice-president, and W. L. Wild, secretary-treasurer. It is hoped to have the plant in operation by December 1st.

Maxwell Manager Dies Suddenly in Oregon

A. V. Davis, Northwestern manager of the Maxwell Motor Co., of Detroit, died suddenly at his home in Portland, Ore., on Sunday morning last, due to an attack of heart disease. Davis was 31 years old and went to Portland from Detroit less than a year ago.

Oakland Branch for Kalamazoo.

The Oakland Motor Car Co. has opened a branch in Kalamazoo, Mich.; it is in charge of Henry R. Jossman.

PALMER GOOD SPENDER BUT NOT VERY GOOD ON FIGURES

Michigan Financier not Clear as to Where that $1,656,000 Went—Kept Only a Check-Stub System—Then Lost Stubs.

Unless his bank books and check books can be found, the creditors of Victor L. Palmer, the financial genius of the badly busted Michigan Buggy Co., of Kalamazoo, will have a difficult time in discovering what he did with the $1,656,000 which he listed as liabilities when he filed his personal petition in bankruptcy.

This was indicated when Palmer took the stand last week for investigation by the referee in bankruptcy. He testified that he had never kept a cash book showing his personal expenses but had relied on his deposit and check books. He also declared that as he had made it a practice to destroy his canceled checks drawn on local banks and, unless the books could be found, it would be impossible for him to give the details of his financial transactions.

Questioned concerning the whereabouts of the bank books, he stated that they had been in his private desk at the time the Buggy company went into the hands of the receiver, and he supposed they were now in possession of the trustee.

Palmer told the referee that he had three separate bank accounts in Kalamazoo, and that the money was still in the banks.

"Did you not sell some bank shares on July 3 of this year?" he was asked.

"No, sir," was the reply.

From the line of questioning it is apparent that the trustees will make an effort to prove that Palmer sold certain shares to a Kalamazoo man a month prior to the failure of the Michigan Buggy Co.

Palmer stated that he had obtained money from a local bank to send his wife abroad. She has been in ill health for two years, he explained, and left last February. She is still in Europe.

The witness remembered buying some local bank stock at one time during the year, but could not give the exact date. He had paid $5,300 cash for the stock. He was asked if that was not an unusual transaction for him, and one which for that reason would be easily remembered, but he said he was not prepared to state. He explained that he purchased the bonds directly from the president of the bank and was not sure whether or not he received a receipt for the money or whether the bonds were delivered to him at the time.

As a result of the hearing, the Michigan Trust Co., of Grand Rapids, was appointed

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trustee under bond of $1,000. It was explained that the bond was placed at this small figure because there was little likelihood of securing any part of Palmer's assets, as he had pledged nearly everything he owned with the exception of $103 cash in bank and several shares which he held in the Citizens' State Savings Bank of Plainwell. No appraisers were named, as it was pointed out that there would be practically nothing to appraise.

Palmer will be examined further on November 11th.

State Foreign Corporation Tax Upheld.

State authorities, who have been vainly trying for years to levy taxes on foreign corporations which do business within their confines, were given a solution of the problem this week when the United States Supreme Court upheld the foreign corporation tax law passed by Massachusetts in 1909.

Judges Day, Holmes, McKenna, Lurton, Hughes and Lamar—Van Devanter and Pitney dissenting—classified the tax as a fee exacted for the privilege of doing business in the State and not as a tax on the property of the corporation outside the State. The tax demanded is one-fiftieth of 1 per cent. of the foreign corporation's authorized capital stock, and opposition to it has been on the grounds that it conflicted with the Federal corporation tax law and imposed a burden on interstate commerce. The Supreme Court decision saves to the Bay State an income of $250,000 a year, as well as $1,000,000 which is involved in suits pending for the recovery of taxes paid during the past four years.

Electrical Men to Discuss Car Problems.

Taking up problems not altogether foreign to its members, the American Institute of Electrical Engineers has scheduled its next meeting, which will be held in the Engineering Societies Building, 33 West 39th street, New York City, on Friday evening, November 14th, to include nothing put papers having to do with the electrical equipment of gasolene automobiles and has urgently invited members of the Society of Automobile Engineers to be present and to take part in the discussion. The papers to be presented and discussed at the meeting are as follows: "Advantages of Clutch Type Generators and of Separate Lighting and Starting Units for Motor Cars," by Alexander Churchward; "Dynamo Electric Lighting for Motor Cars," by Alfred E. Waller; "Electrical Equipment for Gasolene Automobiles," by Frank Conrad of the Westinghouse Electric & Mfg. Co. It is expected that the meeting will be largely attended and that it will lead to other meetings along similar lines.

WILLYS-OVERLAND PRESENTS FULL FINANCIAL STATEMENT

Figures Show Prosperous Condition of Willys Properties—Assets Total $32,600,000 — Valuation of $14,000,000 on Goodwill.

Its consolidated balance sheet, as of June 30th last, having become available, amplification of the chief items of the Willys-Overland Co.'s financial operations, previously disclosed, have become possible.

The report, which covers not only the Willys-Overland institution but the several subsidiary companies, places the total assets at $32,602,836.07, of which amount $14,059,999.98 are represented by good-will, etc.

Exclusive of outstanding stock and the surplus the liabilities total $4,494,362.90.

The balance sheet includes the operations of all of the Willys subsidiaries for the complete year ending June 30th, but those applying to the Willys-Overland Co. itself cover only the period from November 18, 1912, (when the Ohio company succeeded the New York corporation), to June 30.

The report in full is as follows:

Assets.

Property Account:		
Goodwill, Patents, Trade Marks, etc.		$14,059,999.98
Real Estate, Buildings, Plant and Equipment as based on appraisals made by the American Appraisal Co., as of June 30, 1912, adjusted in respect of additions and deductions since—		
Real Estate	$321,006.07	
Buildings	2,435,220.81	
Machinery and Equipment	2,104,158.44	
Tools, Dies, Patterns, etc. (as depreciated)	528,218.25	
Furniture and Fixtures	70,002.54	
Automobile Equipment in Service	76,676.78	
Construction Work in Progress	85,725.60	5,621,008.49
Total Property Investment		$19,681,008.47
Investments in and Advances to Affiliated and Allied Companies		4,065,616.62
Current Assets:		
Inventories of Raw and Worked Materials and Supplies and Finished and Partly Finished Cars and Parts on hand or in transit, at cost	$5,186,858.56	
Accounts Receivable (less Reserves)	672,121.97	
Notes Receivable	363,875.55	
Miscellaneous Investments	26,825.00	
Cash in Banks and on hand	2,556,241.24	8,805,922.32
Deferred Charges to Future Operations:		
Expenditures on Development of New Overland Models	$5,227.87	
Prepaid Interest, Insurance, etc.	45,060.79	50,288.66
		$32,602,836.07

Liabilities.

Capital Stock—(Authorized and Issued):		
7% Cumulative Preferred Stock—50,000 Shares of $100.00 each	$5,000,000.00	
Common Stock—200,000 Shares of $100.00 each	20,000,000.00	$25,000,000.00
Capital Stock of Subsidiary Companies Outstanding, including Proportion of Surplus appertaining thereto		37,513.99
Total Capital Obligations		$25,037,513.99
Current Liabilities:		
Notes Payable (Trade Accounts, $2,189,614.70)	$2,457,974.94	
Accounts Payable	1,111,792.33	
Pay Rolls and Salaries Accrued	116,247.21	
Miscellaneous Loans and Advances	77,590.63	
Customers' Deposits	219,257.80	
Taxes and Interest Accrued	85,809.66	
Reserve for Quantity Rebates to Customers	172,417.99	
Reserve for Car Repairs under Guarantee	30,000.00	
Preferred Stock Dividends declared payable July 1, 1913	87,500.00	4,358,590.56
(Common Stock Dividends $1,300,000.00 were declared in July, payable in August, 1913.)		
Reserve for Depreciation and Accruing Renewals:		
Balance at June 30, 1912	$24,570.38	
Amount provided out of Earnings for the year, exclusive of provision for Depreciation of Tools, Dies, Patterns, etc. ($205,000.00) deducted from the Asset	193,155.12	
Less—Book Value of Dismantled Property and Replacement Expenditures written off	81,953.16	135,772.34
Surplus:		
Net Profits from July 1, 1912, to June 30, 1913	$5,653,898.37	
Deduct—Proportion thereof accrued to November 25, 1912, the date of commencement of operations of the new company	1,686,221.80	
Balance, being Net Profits of the new Corporation	$3,967,676.57	
Less—Dividends Paid—		
Preferred, 5¼%	$262,500.00	
Common, 3%	600,000.00	
Dividends paid on Outstanding Preferred Stocks of Affiliated Companies	34,217.39	896,717.39 3,070,959.18
		$32,602,836.07

Income Account.

Net Earnings and Income from Operations of all Companies for the year, after deducting all expenses of the business, including allowances for Corporation Excise Tax and all expenditures for Repairs and Maintenance of the Properties, including an adequate allowance for accruing renewals and depreciation		$5,705,537.46
Add—Other Income:		
Interest on Notes and Accounts Receivable	$151,601.91	
Miscellaneous	25,227.75	176,829.66
Total Earnings and Income from all sources		$5,882,367.12
Deduct—Interest on Floating Debt		228,468.75
Balance—Surplus Net Income for the year ending June 30, 1913		$5,653,898.37
Proportion accrued to November 30, 1912, the date adopted for the purposes of the Accounts as the commencement of Operations of the New Corporation, the Assets being actually acquired as of November 25, 1912		1,686,221.80
Balance, being Net Income of the New Corporation (seven months)		$3,967,676.57

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The Week's Incorporations

Jackson, Mich.—Jackson Gas Engine Co., under Michigan laws; authorized capital, $10,000.

Cleveland, O.—Central Wagon & Auto Co., under Ohio laws; authorized capital, $10,000. Corporators—H. D. Squires and Harvey G. Keck.

Cleveland, O.—Automobile Addressing Machine Co., under Ohio laws; authorized capital, $150,000. Corporators—W. K. Stanley, P. C. Stoller and J. W. Curtis.

Milwaukee, Wis.—Fulton Co., under Wisconsin laws; authorized capital, $25,000. Corporators—Frank L. McNamara, Roger Y. Flanders and John H. Hurley.

Rochester, N. Y.—Indian Taxicab Co., under New York laws; authorized capital, $5,000. Corporators—W. S. Lucas, H. F. Lucas and A. B. Lucas, all of Rochester.

Detroit, Mich.—Federal Rim Co., under Michigan laws; authorized capital, $5,000; to manufacture wheels for motor cars. Corporators—A. H. Goss and H. W. Bailey.

Milwaukee, Wis.—Western Motor Supply Co., under Wisconsin laws; authorized capital, $25,000. Corporators—Roland F. Coerper, M. S. Gross and H. H. Karrow.

Cleveland, O.—Baxter-Frick Gear Cutting & Mfg. Co., under Ohio laws; authorized capital, $25,000. Corporators—Archie Baxter, William H. Frick, Vincent A. Taylor.

Detroit, Mich.—Tulite Auto Bulb Co., under Michigan laws; authorized capital, $25,000; to manufacture automobile lamps. Corporators—L. J. Lepper and James W. Richardson.

White Plains, N. Y.—W. L. Plumb Motor Co., under New York laws; authorized capital, $1,000. Corporators—W. L. Plumb, C. B. Plumb and S. Alton Ralph, all of White Plains.

Buffalo, N. Y.—Frontier Taxicab & Touring Co., under New York laws; authorized capital, $5,000. Corporators—Anthony Carnevale, Samuel Geddis and Frank Conover, all of Buffalo.

Worthington, O.—Worthington Garage Co., under Ohio laws; authorized capital, $3,000; to operate a garage. Corporators—George W. Wing, Frank P. Walling and Madeline Wing.

South Bend, Ind.—Bastian-Morley Co., under Indiana laws; authorized capital, $100,000; to manufacture gas, gasolene and electric apparatus. Corporators—James P. Morley, John P. Hayes, J. Morley.

Boston, Ky.—Boston Starter Co., under Kentucky laws; authorized capital, $100,000; to buy and sell automobile supplies and accessories. Corporators—H. W. Batson, George A. Christman, Graddy Cary.

Brooklyn, N. Y.—Utility Garage Co., under New York laws; authorized capital, $6,000. Corporators—Walter H. Rice, 1441 Bedford avenue; Saidie E. Miller and Hattie M. Rice, both of 237 Maple street.

Chicago, Ill.—Chicago Commercial Garage Co., under Illinois laws; authorized capital, $2,500; to rent, sell, buy and store motor cars. Corporators—Roy F. Beach, St. Clair Cousens and Robert C. McCabe.

Hamilton, Ont.—Hamilton Taxicabs & Garage, Ltd., under Canadian laws; authorized capital, $40,000; to manufacture and repair motor vehicles. Corporators—D. M. Sorenson, H. J. Davidson and others.

Wilmington, Del. — Oakbrook Motor Mfg. Co., under Delaware laws; authorized capital, $250,000. Corporators—W. F. Young, Perkiomen, Pa.; A. H. Yocum, Reading, Pa.; T. S. Doherty, Wilmington.

Chicago, Ill.—Private Motor Service Co., under Illinois laws; authorized capital, $10,000; to deal in motor cars, parts and accessories. Corporators — Charles S. Bougher, Walter H. Eckert, Warren B. Buckley.

Chicago, Ill.—Ford Supply Co., under Illinois laws; authorized capital, $10,000; to manufacture and deal in motor car supplies and accessories. Corporators—Harry Okin, Thomas J. Bagley, James S. McClellan.

Bronx, N. Y.—Simmons Auto Supply Co., under New York laws; authorized capital, $5,000. Corporators—John S. Kelly, 2138 Westchester avenue; George W. Lewis, 42 Broadway; George W. Smith, 901 Tremont avenue.

Newark, N. J.—M. A. Mullin Auto & Livery Co., under New Jersey laws; authorized capital, $100,000; to conduct a general livery business. Corporators—L. H. Vassant, W. F. King and J. H. Taylor, all of Newark.

Brooklyn, N. Y.—N. W. Manufacturing Co., under New York laws; authorized capital, $25,000; to manufacture automobile and body cleansers. Corporators—Chas. E. Williamson, Chas. E. Smith and Lucien C. Wallace.

Brooklyn, N. Y.—Pitts Motor Car Repair & Sales Corporation, under New York laws; authorized capital, $24,000. Corporators—Frank G. Pitts, George C. Walbridge and Rodney C. Walbridge, all of Brooklyn.

New York City, N. Y.—Detroiter Motor Sales Co. of New York, under New York laws; authorized capital, $5,000; to conduct general automobile business. Corporators—Chas. Aschenbach, Jos. Marx and Leon Hamburger.

Chicago, Ill.—Automobile & Cycle Trades Association, under Illinois laws; authorized capital, $5,000; to conduct a collection and adjustment agency. Corporators—Livingstone E. Osborne, J. Milton Tait and W. W. Love.

Brooklyn, N. Y.—Meyer's Garage, under New York laws; authorized capital, $1,000; to operate a garage. Corporators—Louis Meyer, 731 Eastern Parkway; James E. Friel, 1663 Union street; Otto Schult, 618 Linden street.

Santa Ana, Cal.—Duplex Distillate Carburetor Co., under California laws; authorized capital, $50,000; to manufacture a patent carburetter handling low-grade oil. Corporators—H. H. Kelly, Jr., J. C. Metzger and others.

Brooklyn, N. Y.—Coney Island Garage Co., under New York laws; authorized capital, $500; to operate a garage. Corporators—Walter J. Kelsey, 237 72nd street; Arthur Fulder and Frederick Meyer, both of 5313 Fifth avenue.

New York, N. Y.—American Motorists' Protective Association, under New York laws; authorized capital, $250,000. Corporators—Henry C. Reed, New York, N. Y.; Harold L. Sharp, Rutherford, N. J.; James Reilly, Newark, N. J.

Toledo, O.—Carl Electric Vehicle Co., under Ohio laws; authorized capital, $300,000; to manufacture electric vehicles. Corporators—L. M. Henders, M. G. McAleenan, B. E. Robertson, David L. Johnson and M. C. Myers.

New York, N. Y.—Detroit Tire & Rubber Co., under New York laws; authorized cap-

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ital, $2,000. Corporators—Rudolph Henschel, 150 West 141st street; William A. Wellman, 1402 Lexington avenue; Rebecca F. Potter, 109 East 96th street.

New York City, N. Y.—Hirsch & Schwartz, under New York laws; authorized capital, $10,000; to conduct general automobile business. Corporators—Jos. Schwartz, Louis Hirsch and Jacob Schwartz, all of New York City.

Newark, N. J.—Essex Motors Mfg. Co., under New Jersey laws; authorized capital, $100,000; to manufacture motors, machinery, supplies, etc. Corporators—W. H. Simpson, East Orange; M. E. Hudlen, Newark; J. J. Coyle, New York.

New York, N. Y.—Marathon Tire Sales Co., under New York laws; authorized capital, $1,000; to conduct a general tire business. Corporators—Owen Moynihan, Bergenfield, N. J.; Joseph Brewster, 225 East 17th street; Richard M. Farries, Scarsdale.

New York, N. Y.—Weiss & Kronenberg, under New York laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—Charles Weiss, Harry Kronenberg, Mollie Weiss and Bertha Kronenberg, all of 113 West 77th street.

New York, N. Y.—Markell Corporation, under New York laws; authorized capital, $1,000; to operate a motor 'bus line. Corporators—Arthur B. Graham, 412 West End avenue; Archibald E. Stevenson, 128 West 34th street; Mildred J. Pelikan, 13 East 108th street.

Quogue, N. Y.—Dimond-Warren Motor Co., under New York laws; authorized capital, $8,000. Corporators—James R. Dimond, 171 West 71st street, New York; Arthur C. Warren, 517 West 113th street, New York; Thomas Dimond, 139 West 32nd street, New York.

New York, N. Y.—Welding Supply Co., under New York laws; authorized capital, $5,000; to manufacture and deal in motors, vehicles, oxygen-acetylene welding appliances, etc. Corporators—Walter E. McDonnell, Michael J. McDonnell and A. M. Matheson, all of 132 Nassau street.

Recent Losses by Fire.

Green Haven, N. Y.—George Foote; garage destroyed. Loss, $1,000.

Superior, Neb.—Superior Garage; garage and seven cars destroyed. Loss, $15,000.

Pittsburgh, Pa.—A. G. Schnabel & Sons Auto & Wagon Repair Co.; building damaged. Loss, $50,000.

Reading, Pa.—Reigel's Garage, 609 North 3rd street; garage and several cars damaged. Loss not stated.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

E. F. Thompson has been promoted to the post of sales manager of the Motz Tire & Rubber Co., of Akron, Ohio. Previously he was one of the company's department heads.

Benton Fremont, who for the past three years has been an Oakland representative, has been appointed acting manager of the Chevrolet Motor Co.'s branch in New York City. He succeeds Leslie F. Smith, resigned.

W. F. Renolds, formerly with the Lippard-Stewart Motor Car Co., of Buffalo, has been appointed district sales manager of the Selden Truck Sales Co., of Rochester. The latter handles the entire output of Selden trucks.

Will H. Brown, president of the Brown Commercial Car Co., of Indianapolis, has been appointed sales manager of the Cole Motor Car Co.'s branch in that city. The Brown company itself, however, will continue operating as heretofore.

Lee W. Bennett, who has been identified with the New York trade for several years, has acquired an interest in the Syracuse Automobile Supply Co., of Syracuse, N. Y., of which he will become president and general manager. He will assume these duties about November 15th.

F. P. Nehrbas has been appointed factory manager of the Lyons-Atlas Co., of Indianapolis, maker of Lyons-Knight cars. For 11 years, Nehrbas was factory manager for the E. R. Thomas Motor Co., of Buffalo. From August 1st, 1911, until the suspension of the Alco automobile department, he served the American Locomotive Co. in the same capacity.

George H. Matheson, who recently was appointed purchasing agent of the Keeton Motor Co., of Detroit, is not a member of the Matheson automobile family of Wilkes-Barre, Pa., as was at first stated. He was at no time associated with the Matheson car, but instead was connected with the McCord and Hayes manufacturing companies in Detroit.

Invader "Invades" Bay Shore Garage.

Lyndon E. Lee, Walter R. Lee and Edmund W. Lee, who operate in Bay Shore, L. I., as the Bay Shore Automobile Co., are the defendants in a suit filed this week in the Supreme Court for New York county by the Invader Oil Co. The action is for $123.27, the balance of a bill of goods supplied between April 2 and July 2, 1913.

Jeffery Erecting Another Big Addition.

Although the Thomas B. Jeffery Co.'s plant in Kenosha, Wis., already covers 25 acres, work has been started on the erection of an addition which will include 2¼ acres of floor space. The new building will be a steel and concrete structure of standard saw-tooth construction and will be ready for occupancy December 5th.

Little Falls Man Owes Gasolene Bill.

The Indian Refining Co. filed suit this week in the Supreme Court for New York county against John A. Cooney, of Little Falls, N. Y. It is charged that between May 19 and July 29, 1913, the refining company sold him goods to the value of $384.88, on which he paid but $80, leaving a balance of $304.88.

McGraw Takes up Making of Truck Tires.

The McGraw Tire & Rubber Co., of East Palestine, O., is making ready for the marketing of what will be known as the E. C. McGraw truck tire. It constitutes a special department of the business which will be managed by A. Hanschild, former manager of the Pollack Tire & Rubber Co.

Havers Reaches Out for Foreign Trade.

Edgar A. Wilhelmi, the New York exporter, left New York last week, taking with him, among other things, a Havers "six" car. He will visit both Great Britain and the Continent and later will go to India, where several parties are bidding for the Havers agency.

Standard Truck May Change its Base.

The Standard Motor Truck Co., of Cleveland, is negotiating with the board of trade at Warren, O., for its removal to the latter city. A factory site in the latter city already is assured, but the removal of the company hinges on a certain amount of stock subscription.

Wants Yonkers Garage to Pay Note.

A note for $100 given, it is claimed, by the Yonkers (N. Y.) Auto Station, Inc., to the Thomas Howard Co. of Brooklyn, September 12, 1913, is the basis of a suit filed this week in the Supreme Court for New York county by Vandewater & Co.

Another Republic Becomes Chevrolet.

Following similar action in other States, the Republic Motor Co. of New York has been authorized by the Supreme Court to change its name to the Chevrolet Motor Co. of New York. The change becomes effective November 28th.

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In the RETAIL WORLD

Eureka Garage is the style of a new business in Eureka, Cal.

T. C. Duren, of Thomasville, Ga., is about to open a repair-shop.

Samuel Lomos, of Danville, Cal., has sold his garage to Harris Bros.

T. B. Ferguson, of Washington, D. C., plans to build a garage on 21st street.

Ideal Garage is the style of a new building being erected in Devil's Lake, S. D.

A. B. Gay, of Randolph, Vt., plans to build a garage; it will stand on Merchants' Row.

J. J. Richards has purchased the Austin Avenue Garage in Waco, Tex. He will operate it.

The Chalmers Motor Co. of Virginia plans to build a new service station in Norfolk, Va.

R. L. Brewster has opened a garage in Des Moines, Ia. It is located at 916 West Walnut street.

Carl Eckman, of Mankato, Minn., has awarded the contract for a new garage; it will cost $6,500.

J. L. Dugan is about to enter the trade in Iowa Falls, Ia. He has secured the Paige-Detroit agency.

The W. & F. Felberty Co., of 7916 Lake street, Cleveland, O., will build a garage; it will cost $6,000.

Dolandson S. Sipos, of Colton, Cal., has opened a garage; it is located in the De-Armand building.

E. Hudelson and P. Yancey have purchased the Galt (Cal.) Garage from T. J. Sawyer and Claud Mood.

C. Barry, of Thief River Falls, Minn., is about to erect a garage and machine shop; the estimated cost is $7,000.

Tri-State Sales Co. is the style of a new entrant to the trade in Dallas, Tex. It will distribute Marathon cars.

Larsen & Lehnen, of Corning, Ia., have dissolved partnership; Walter Larsen is engaged as a salesman in Omaha.

Cecil R. Culler and others plan to establish a wholesale and retail automobile supply business in Orangeburg, S. C.

The J. A. O'Leary Auto Co., of Iowa City, Ia., will build a new garage; a site has been purchased on Linn street.

A new garage is being erected in Rochester, Pa., for Conrad Bros. It will be one-story and of modern construction.

Henry Desmaris, of Holyoke, Mass., is erecting a three-story garage, 35 x 60 feet; it is located at 15-17 Division street.

A. J. Schmidt, of Modesto, Cal., is arranging to enter the trade in Porterville, Cal. He will handle Studebaker cars.

Arthur H. Swank, of Galesburg, Ill., has purchased from Frank Clark the Main Garage; it is located on East Main street.

John Boda and Charles Halberg have taken over a garage business in Sheldahl, Ia. The new style is Sheldahl Auto Co.

The Economy Auto Garage & Supply Co. has been formed in West Reading, Pa. It will locate on Pennsylvania avenue.

R. Carstensen, of Sacramento, Cal., plans to erect a garage; he also operates the Crystal Ice Co. and Snowball's saloon.

Charles D. Fisher, of Hagerstown, Md., has secured permission to erect a garage; he will build on North Mulberry street.

Glen Perdue plans to open a garage in Salisbury, Md. He is remodeling a warehouse on Dock street for that purpose.

B. L. Marks, of San Francisco, has been granted permission to operate a garage; he plans to locate at 4th and Brannan streets.

A new building has been erected in St. Louis for the Barrows & Crawford Motor Co. on Locust street; its cost was $40,000.

Edward P. Joster, of Baltimore, Md., has secured plans for a one-story garage to be erected on Spring street; it will cost $5,000.

The Automobile Training School, of St. Paul, is about to erect a two-story garage; the school is located at 199 West 6th street.

Frank Mead and James Ready are about to open a garage and repair-shop in Franklin, N. H. They will locate on Memorial street.

All interest in the garage firm of Cozad & Wise, of Villisca, Ia., have been acquired by Wise. Cozad retires from the business.

W. T. Wilson, of Omaha, Neb., has sold his Auburn agency to C. O. Wilson and W. F. Hause; the latter will trade as Wilson & Hause.

William Moore, of Oneonta, N. Y., has opened a garage on Windsor avenue; he formerly was connected with the Colburn & Moore Co.

F. & E. Sweraldo, of 252 Central avenue, East Orange, N. J., have been granted authority to build a garage; the estimated cost is $15,000.

The Hike Garage, in Sloan Springs, Ark., has been taken over by W. H. Bailey; he took immediate possession and is operating the business.

A. Ollendorf and Henry Hauman, of Newark, N. J., plan to open a garage at 45 William street; they will remodel a building for their occupancy.

W. H. Shaw, of Sonora, Cal., is remodeling for garage use a building which adjoins his livery stables; he recently entered the trade as a Maxwell dealer.

Ludwig and Jacob Walters have purchased the Mansfield (O.) Garage, located at 66 North Walnut street; Oscar Sigler will continue as manager.

J. H. Daniels & Son will open a garage, repair and accessory business in Eugene, Ore. They have leased space in the Quimby building, on West 8th street.

Edward McCasne and Simon Rersetter have taken over the La Porte Garage in Waterloo, Ia. Paul Clement, the former owner, retires from the business.

H. J. Neverman, of Denver, Ia., has purchased the Nicholas-Clark Garage in Waverly, in the same State; he has removed with his family to the latter town.

The Coryell-White Motor Car Co. has been formed in Pasadena, Cal. The company will handle Paige-Detroit and Howard cars at 161 West Colorado street.

Staples & Kimpton, of Phoenix, Ariz., have taken over Wesley Wood's garage at 235 West Washington street; the name has been changed to Capital City Garage.

R. M. Davis, manager of the Fort Worth (Tex.) Auto Supply Co., has become an automobile dealer; he has secured the Winton representation for several counties.

The Spaulding Auto Co., of Aberdeen, S. D., has been granted permission to build a two-story and basement garage, 50 x 120 feet; it will be of brick and will cost $14,000.

The International Motor Car Co., of Douglas, Ariz., has sold its business at 715 G avenue to J. Scott and others; the style

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has been changed to International Garage.

Carl Bros., formerly of Houston, Tex., have entered the trade in Waco, in the same State, under the style Washington Garage; they are located at 110 Washington avenue.

W. H. Beidler, of Sacramento, Cal., has taken over the agency of E. G. Anderson; the latter was a sub-dealer under Don Lee, San Francisco, the Cadillac distributer in California.

The Leon T. Shettler Co., of Los Angeles, has taken over the distribution of Apperson cars in Arizona; the company plans a campaign for the establishing of sub-dealers.

G. H. Marvin, of Gastonia, N. C., and J. L. Snyder, of Charlotte, in the same State, have formed the Chase Motor Truck Sales Co. in the latter town; they will handle Chase commercial cars.

H. B. Beattie, formerly with the L. S. Hall Rubber Co. in Philadelphia, Pa., has entered the trade for himself; he has organized as H. B. Beattie & Co. and will handle tires and accessories.

The Cincinnati (O.) Automobile Co. is completing a two-story, fire-proof garage and salesrooms on West Court street, near Race street; the company stocks Pope-Hartford cars and supplies and accessories.

The Reliable Motor Car Co., of Salt Lake City, has purchased the interest of J. Mitchell in the Mitchell-Brown Repairing Co. The latter company will be known as the Brown-Reliable Motor Car Repairing Co.

The Auto Service Co. and the Cabarrus Motor Co., of Concord, N. C., have consolidated; the business will be continued in the Cabarrus location on West Corbin street. J. C. McCanless, M. Lafferty and M. McConnell are the proprietors.

Arthur Helbing, of Beaver Dam, Wis., has sold his interest in the Beaver Dam Overall Co. and has purchased the Stoddard Garage; he will share his quarters with the Beaver Garage Co. and will devote most of his time to the sale of cars.

The Dimond-Warren Motor Co. has been formed in New York City for the purpose of handling the wholesale and retail distribution of S & M cars in the metropolitan district; the company has located at 2002 Broadway. The officers are: President, Thomas Dimond; vice-president and treasurer, J. Renwick Dimond; secretary and manager, Arthur C. Warren. The Dimonds are connected with the Dimond Iron Works. Warren has been connected with the trade for ten years, as a racing driver and later as a salesman for Buick, Stearns, Pope-Hartford and Palmer-Singer cars.

TENTATIVE PROGRAM FOR S. A. E. WINTER MEETING

Benefits from Farm Tractors Included in Topics for Discussion at Professional Sessions—Banquet at the Hotel Plaza.

Following brief announcement of the dates of the annual meeting of the Society of Automobile Engineers, which will be held in Grand Central Palace in New York City during the week of the automobile show in that building, a tentative program now has been adopted and the titles of some of the papers that are to be read made public. The meeting proper, as stated three weeks ago in Motor World, will be inaugurated with a strictly social gathering at the Manhattan Automobile Club on Sunday afternoon, January 4th, at three o'clock. On Monday morning the Standards Committee will meet at the headquarters of the society at 1790 Broadway, and on Tuesday morning the professional sessions will be commenced at Grand Central Palace. Three sessions will be held on Tuesday—morning, afternoon and evening—and none will be held the following day, Wednesday. Two sessions will be held on Thursday—morning and afternoon—and the meeting will be brought to a close with the annual banquet, which is to be served at the Hotel Plaza, Fifth avenue and 59th street.

The whole of the first professional session will be devoted to reports of the various divisions on standardization, as will a good part of the second session. Only one paper has been announced for this session, though it is expected that others will be announced later. The paper is entitled "Storage Batteries" and will be presented by W. H. Conant, manager Detroit division of the Gould Storage Battery Co.

The Tuesday morning session has been styled a Commercial Vehicle Session and will be devoted entirely to subjects pertaining to motor trucks. The papers that will be read are as follows: "Final Drive for Motor Trucks: a—Internal Gear, by V. V. Torbenson; b—Double Reduction Live Axle, by B. B. Bachman; c—Worm Gear, by John Younger; d—Chain, by H. D. Church." "Gasolene Mining Locomotives," by Joseph A. Anglada; "Development of Electric Tractor for Handling Freight Cars Over Tracks Laid in City Streets," by T. V. Buckwalter; "Farm Tractors and What They Have Done to Promote Better Farming Conditions."

The reading of reports at the Thursday morning session will be supplemented by three papers, as follows: "Electric Gear Shifting," by Frank N. Nutt; "Taxicab Service," by L. P. Prossen; "Radiators," by J. W. Cain. At the afternoon session but one paper, entitled, "Knight Motor Cooling Test," and prepared by R. C. Carpenter, has been scheduled.

Inter-State Ordered to Explain Disparity.

Officers of the Inter-State Automobile Co., of Muncie, Ind., have been ordered to appear before the referee in bankruptcy, Henry C. Sheridan, Tuesday next, 11th inst., to give testimony concerning their acts, and also regarding the company's assets and liabilities.

The order was issued on the petition of the Livingston Radiator & Mfg. Co., of New York, whose claim amounts to $7,000, and who assert that the great disparity between the assets and the liabilities before and after the company was adjudged bankrupt requires explanation. The petition also charges that owing to the "alleged or pretended dissension" among the stockholders and officials great loss and waste has been occasioned and an early sale is, therefore, asked for in preference to a continuance of the business.

International Truck Affairs Untangling.

Although the affairs of the International Motor Co., of New York, were rendered somewhat complex last month when minority stockholders opposed a mortgage loan of $1,200,000, the company professes to be within easy reach of an exit from its troubles; the court, to which a minority stockholder applied for an injunction restraining the company from borrowing the additional capital, will probably render a decision Saturday, 8th inst., when the judge, who has been ill, resumes his duties. Officers of the company state that there is every likelihood that the loan will be secured and, also, that on all bank obligations, in fact on all except merchandise debts, maturity will be waived for three years, thus giving the company sufficient resources to render it, as one officer expressed it, "the strongest truck company in the business."

Champion Seeks to Save "Champion."

If Albert Champion, proprietor of the Champion Ignition Co., of Flint, Mich., can help it, the Champion Spark Plug Co., of Toledo, O., will not much longer use the name or term Champion in its title. In an effort to prevent it, the Flint man has brought suit in the Federal court in Ohio charging the Toledo company, which is composed of Robert A., Frank D. and Agnes Stranahan, with infringement of his trade mark. He seeks a restraining order preventing the use of the name Champion and also an accounting of damages since July 5, 1910, when the Toledo company was organized.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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NIGHT WORK FOR MOTOR TRUCK.

In all large centers there is more or less trucking done at night—the larger the city the more the night trucking, usually, in proportion. As a rule, however, such work is done more as a matter of necessity than of policy. Milk, for instance, is hauled at night to have it at the depots ready for early morning distribution; coal sometimes is delivered at night to buildings so located that day delivery interferes with traffic and therefore is not permitted; and the loading and unloading of steamers necessitates night trucking.

It would seem, however, that there are many possibilities in night trucking from a purely economic point of view, where conditions are such as to permit the necessary work at the beginning and the end of the trips. It is almost axiomatic that the speed and endurance of the motor truck are often kept in the background by delays caused by traffic blocks and slow-downs, all of which can be avoided by running at night. In other words, more work can be done in a given time than in the day, generally speaking. And it is almost unnecessary to mention the fact that a continuous run from starting-point to terminus is far less wearing on a truck—its motor, transmission system, brakes and tires—than a run during which the car is frequently stopped and started, slowed down and accelerated, to the detriment of the tires and brakes in particular, but of everything else, more or less.

What trucking can be done during the night does not have to be done during the day, so that the streets would be relieved of a certain amount of traffic at a time when relief is most needed. And if the machines are kept standing during the day, they can be cared for under better conditions than if such work were done at night. From an electric vehicle point of view it is an advantage to charge during the day when the central station load is light.

Obviously there are objections to night trucking. Night work is distasteful to many men, and occasionally darkness interferes with operations—though not often. A certain amount of rearrangement of details might have to be effected to suit the new order of things. And there is the possibility that night work might bring about some increase in the wage scale. It would seem, however, that the advantages considerably outweigh the disadvantages, and that there is an opportunity to work out an improvement that has received too little consideration in the past.

WHERE THE CYCLECAR FALLS SHORT.

It being so distinctly apparent that any narrow gauge vehicle which needs must be balanced between two ruts, or else be driven with one or, rather, two wheels in a rut, cannot prove of all-around practicability, in this country, at least, the wonder is that so much energy is being devoted to the invention and exploitation of cyclecars.

Haply not a great deal of real capital has yet been actually invested in their manufacture and it is possible, therefore, that some of those who incline to such investment will find cause for pause in the opinions brought out last week by the discussion of the subject by the Metropolitan Section of the Society of Automobile Engineers. If the discussion serves this purpose, the Society will have rendered the automobile industry an uncommon service.

Brought face to face with stern facts, even the enthusiastic exponents of the cyclecar were for the first time, and more or less reluctantly, forced to acknowledge the limitation of the little vehicle which has been press agented into such undue prominence.

To agree that it is adapted chiefly for city and suburban usage is sufficient to condemn it. It may be true that there are many millions of people living in cities, but it requires inordinate faith and enthusiasm to believe that any very considerable number of those who may purchase cyclecars would restrict them to such use. Its capacity for annihilating distance is too great and human nature is too frail to permit the belief that persons likely to buy cyclecars will confine themselves to streets or macadam roads.

More than this, it has been abundantly demonstrated that no very large part of the American public will purchase or long make use of toylike or otherwise diminutive automobiles, no matter what may be their selling price. It appears to have been overlooked that there has been an almost unending succession of such vehicles produced and exploited and that each in turn created a splutter and then passed out. To slightly change their shape, increase their limitations by narrowing the tread, and call them cyclecars will not, in our opinion, be attended by happier results.

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DAVIS IS VICTORIOUS IN GRUELLING DESERT RACE

Ex-Stage Driver Leads Home Eight Survivors Over 574-Mile Course —Bell (Marmon) and Nikrent (Buick) Next.

It is a far cry from stage coach driving to automobile driving, but that experience gained in the one may be good in the other was demonstrated yesterday (Wednesday) when Olin Davis, who at one time was a desert stage driver plying the whip in the shifting sands of Arizona, won the sixth annual Los Angeles to Phoenix, Ariz., road race at the wheel of a Locomobile. Over 574 miles of city streets, mountain roads and desert sands—chiefly sand—Davis piloted his car with a pack of 24 others following after; but none could catch him. He finished the grind in 18 hours 54 minutes, which is at the rate of 31 miles an hour. His time, as compared with the times of the other eight who finished, is as follows

Driver and car.	Time.
Olin Davis, Locomobile	18:54:00
Guy Bell, Marmon	21:45:00
Louis Nikrent, Buick	22:11:00
Jack Rice, Simplex	22:58:00
Ben Buxton, Mercer	23:28:00
Robert Creer, Mitchell	24:03:00
Boyd Ellis, Buick	24:04:00
Rev. E. P. Schenck, Ford	24:30:00

It is obvious that Davis did not have a particularly difficult time in winning, and even though his average speed was comparatively low, judging from other space-annihilating performances, that he "wabbled a bit," to put it mildly, on some of the desert roads must be patent to any who have any experience of Western so-called highways. According to custom, the 25 starters were sent away from Los Angeles soon after sun-up, their order of starting being as follows:

Charles Soules, Cadillac; W. H. Carlson, Simplex; Harry Ham, Cadillac; Olin Davis, Locomobile; Omar Toft, Simplex; L. J. McKone, Cadillac; Barney Oldfield, Simplex; Lowell Smith, Ford; James M. Smith, Buick; Tom Waters, Fiat; Guy Bell, Marmon; E. V. Tracy, National; Frank Verbeck, Fiat; A. T. Dickey, Packard; F. Wallace, Apperson; W. A. Folks, Blue Midget; J. F. Watson, Overland; Henley Ellis, Buick; H. J. Pink, Cole; H. L. Greer, Mitchell; J. C. Rice, Simplex; J. C. Tobin, Apperson; Ben Buxton, Mercer; Rev. E. P. Schenck, Ford; Louis Nikrent, Buick.

As was the case two years ago, the course led southward down the coast to San Diego and then east across the Colorado River to Yuma, which was the night control. Last year the course led from San Diego around the mountains and the Salton Sea. From Yuma the trail led to Phoenix, Ariz., and someone with a penchant for figures has figured that of the 574 miles, 150 were boulevards, 170 mountain roads and 254 mostly the shifting sands of the desert. Between the starting point and the finish line there were 11 checking stations, including the control at Yuma, which is 368 miles from Los Angeles and a fairly long jaunt for a day.

As it was, only four of those who got as far as Yuma checked in before dark and the others all had their lights going. But not all of them survived to finish the first day's run. Of the 25 that started, only 19 reached San Diego, 130 miles away, and but 14 drew into Yuma that night, a fact which is eloquent of the conditions with which the drivers had to grapple.

Although he did not finish the race, Barney Oldfield, from whom great things were expected, provided no small part of the excitement and at one time it was reported that he had been killed. Oldfield lowered the record from Los Angeles to San Diego from 3 hours 7 minutes to 2 hours 41 minutes, thereby raising the hopes of his followers. Later, however, he slipped off the road into the Colorado Desert, where he remained until the driver of the next car towed him back to terra firma and started him on his way. He reached Yuma all right, but early the next day side-swiped a farmer's wagon, stampeded the horse, wrecked his Simplex—and quit. Rice, on the other Simplex, picked him up and brought him in.

Oldfield, however, was not the only one to furnish thrills. Forty miles from the starting point Omar Toft wrecked his Simplex; 60 miles further along the course McKone and his Cadillac came to grief, and both he and his mechanic were carried in on Waters's Fiat, which also had been wrecked after passing San Diego. W. H. Carlson, at the wheel of a Simplex, was the first into Yuma, and 12 minutes later Rice, in another Simplex, rolled in, carrying Oldfield and his mechanic. Charles Soules drove his Cadillac to within 100 miles of the finish line before he was forced out, and Hams, also in a Cadillac, went 20 miles further before he, too, had to quit—wrecked.

Louis Nikrent, who, accompanied by his brother Joseph, won the desert race with a Buick in 1909, was another man of whom great things were expected and, though he started last, he reached Yuma fifth; eventually he finished in third place. Frank Verbeck, who won the July race to Sacramento, finished 11th in time to Yuma, but a succession of troubles in the awful Mammoth Wash Sink and on the sands of the desert eliminated him from the running.



*Indicates Sanction by A. A. A.

Nov. 7-8, Philadelphia, Pa.—Quaker City Motor Club's economy run.

Nov. 7-15, London, England — Annual British Automobile show.

Nov. 8-15, Atlanta, Ga.—Atlanta Automobile and Accessory Association's fourth annual automobile show in the Auditorium.

Nov. 9 and 12, Shreveport, La.—Track racemeets under auspices of J. A. Sloan.*

Nov. 12, 13, 14, New York, N. Y.—Motor Dealers' Contest Association's reliability contest.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 12-15, Bridgeport, Conn.—Second annual automobile show in State Armory.

Jan 24-31, Chicago, Ill. — Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

Feb. 23-28, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's annual show.

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HOLDING THE MIRROR UP TO THE CYCLECAR

Little Vehicle Subjected to Searching Criticism by S. A. E. Members—Deemed by Majority to be Fit Only For Town Service—None Able to Define "Cyclecar" But Nearly All Know What it Should Mean.

"When is a cyclecar?" quite as much as "What is a cyclecar?" was the rather knotty question that served as considerable of a poser for the hundred-odd engineers and others who attended the monthly meeting of the Metropolitan Section of the Society of Automobile Engineers that was held on Thursday last, 30th ult., at the headquarters of the Society in New York City. Regardless of the glibness with which the foreign automobile manufacturer may be able to answer either question, that the American manufacturer is not blessed with or cannot be blamed with having and not disseminating information which will enable him to explain just where the miniature automobile leaves off and the cyclecar commences, or vice versa, was made very plain.

The meeting was devoted entirely to a discussion of the broad topic "Cyclecars," and though the delving was deep—it was the first serious consideration of the subject, in fact—and much of an enlightening nature was brought forth, not one of the hundred-odd engineers and others who attended could suggest a meaning for the word "cyclecar." A. L. McMurtry made the best attempt at it, however, and brought down the house by stating that to the public, at least, a cyclecar appeared to be a "three- or four-wheeled vehicle which sells for $350 and costs $600 to build."

Cyclecar Essentially Town Vehicle.

But after all was said and done, it undoubtedly was the concensus of opinion of those present that a cyclecar is essentially a town vehicle, most useful on paved city streets and limited in its effective or comfortable range to a radius of action of about 50 miles around large cities where unrutted roads are not the rule; that it is not a touring vehicle or one for general all-around use was the overwhelming opinion.

Much was said for the cyclecar and much was said in arraignment of it in the search for a reason for its being. And in this respect McMurtry expressed the sentiments of more than one of those present when he stated in the course of his remarks that the advent of the cyclecar "has afforded questionable promoters a new excuse to organize manufacturing companies to build cyclecars at ridiculously low prices." McMurtry took up probably more time than did any one else in voicing his sentiments for and against the cyclecar, and in the end his sentiment for the motorcycle and against the cyclecar took the form of a graceful tribute to the two-wheeled vehicle, to its overwhelming advantage over the three-tracker or the narrow tread two-tracker and to the seeming foolishness of attempting to convert it into a cyclecar by the not altogether simple expedient of adding two more wheels to it. McMurtry said, in part:

Modern Motorcycle Little Understood.

"The cheapest motor vehicle is the motorcycle. Next to it is the cheap automobile. Most of you are aware of the characteristics of the cheap automobile, yet few really know the modern high-power motorcycle. Of all motor-propelled vehicles, the modern motorcycle is the least understood and the most universally condemned. Almost all the arguments against the modern motorcycle are false because they are based on assumptions rather than on facts.

"The cylinder volume tax in some countries was so heavy that the manufacturers designed cars fitted with small high-speed motors. These small cars in most cases were exact duplicates of the regular product on a much smaller scale. It is a mistaken idea that these cars were designed solely to compete with the inexpensive American car, as some appeared on the highways long before the so-called invasion of the American car.

"Assuming that a two-passenger car containing all the essentials of a motorcycle, thereby avoiding apparently the expensive construction of the automobile, or a miniature car built on a lesser degree of refinement would answer the requirements, manufacturers of such a car have named it a cyclecar. We therefore have two types of a cyclecar—namely, the modified motorcycle and the small automobile. . . .

Pointed Questions that Lack Answers.

"The average automobile engineer has always shown a certain amount of contempt for motorcycles in general. Little do they realize that the motorcycle engineer has brought his product to a high state of refinement, equal to, if not superior to, the best automobile.

"It is peculiar that the earlier types of motorcycles were belt driven, while the modern types are chain driven through clutches, yet the small types of cyclecars are belt driven. If a cyclecar is designed based on motorcycle practice, it should have all the refinement of the motorcycle in regard to both material and workmanship.

"If it is possible to build a cyclecar which embodies almost all the essential elements of the motorcycle, why are not the motorcycle builders making them? Why are so few interested?

"If we take the price of a motorcycle as a basis of comparison, then a motorcycle type of cyclecar should reasonably cost over $500. This is provided, however, that the proposed cyclecar is built with the same sterling quality of workmanship and material which may be found in the modern motorcycle.

Is the Demand for the Cyclecar Real?

"All the proposed American cyclecars are nothing more or less than small automobiles and as such are in a class by themselves in regard to utility, operation and cost of maintenance. The price of the actual American cyclecar is very close to that of the cheap automobile, while the prices of the cyclecars that remain in blueprint form are too low to guarantee either first class construction or their actual existence.

"As the cyclecar is at present of considerable interest it is natural to hear of a great demand for it. Has this demand been analyzed? Is it a question of what is wanted or what can be supplied? Does the question of cost supercede mechanical construction? Does the demand actually exist, or is it a question of many inquiries and few sales?

"Why are the large automobile factories with their wonderful manufacturing facilities not attempting to supply it? Can it be possible that the makers of cheap automobiles are waiting to eliminate their list of full equipment, design a skeleton body and meet the demand for a cyclecar with a cheaper automobile?

"It is not my intention to appear pessi-

(Continued on page 35.)

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GETTING READY FOR WINTER

Cold Days Mean Dollars for the Garageman Who is Prepared—Stock of Anti-Freeze and Winter Wares Should be Ready for the Call.

Now is the golden opportunity for the dealer who is wide awake and fully capable of grappling with his opportunities. Winter will soon be here and, instead of dreading it, the live, energetic chap is going to make it an occasion of profit. What are you going to do about it?

Have you got your anti-freezing solution ordered? Or will you wait, as many do, until after the real need has passed? The time when a man comes to you for it is the time to have the stuff on hand so you can give it to him. The transition from moderately cold weather to extremely cold weather takes place very quickly; watch the calendar and the weather reports and be prepared for the change. The change is coming; there is no uncertainty. It is not a question of stocking goods that may never be called for.

Demands that Cold Weather Causes.

Already there is a demand for gauntlets, lap-robes, rugs, hood-covers, footwarmers, etc. With prices right, the average motorist would rather purchase this equipment from his dealer than from anyone else.

There are carburetters that are particularly adapted for cold weather starting; there are primers that many a customer would buy to aid his electric starter, if he only knew about them. The dealer who suggests these conveniences to his customers is likely to make a friend and a profit at the same time.

This suggests the thought that the way to sell things is to have them for sale. No man who has a picture of a car in his pocket is regarded as a dealer in cars. If you plan seriously to undertake the sale of those accessories which will bring you profits, carry a stock of the staples and at least a sample of the others.

CLEANLINESS AND DIRT AND THEIR RELATION TO BUSINESS

Clean windows; clean floors; clean desks; clean repair shop; clean stockroom. They all go together. Where you see one you are likely to see the other. The man who hates dirt hates it anywhere and teaches others to hate it just as much. Dirt is a foe to good business. It breeds incompetence. It breeds distrust, shiftlessness and failure.

"Show me the garage that is dirty and ill-kept and I'll show you a garage that is not making money," said a keen-eyed traveling salesman.

The clean man cleaves unto clean things. There is no argument in favor of dirt. If you were to analyze why some dealers feel discouraged and hopeless and blue, you would in nine cases out of ten find the answer in that one word "dirt."

Clean up! Brighten up! Stir up! Begin now!

SAMENESS OF WINDOW DISPLAYS; WAYS TO AVOID THE MONOTONY

Now is the time to think of effective window displays. A simple car in the window is not enough. People get tired of seeing the same thing and after a very short time it ceases to attract attention. That means you should plan some way of changing your window display—and plan to keep it constantly changing.

Even the addition of a rug on the floor is a change where the floor has been bare. Add a few potted plants, such as ferns and palms, it creates still more interest. Why not try a new method of window lighting, so that your window will get maximum attention at night?

Husbands and wives are more frequently down town together at night than at any other time. Perhaps if your display is just right it may be the means of centering interest on your particular car. Little things count and such a thing as a particularly attractive display might be just the means of swinging an order your way. It has been known to happen before—and every salesman is aware of sales switched as a result of details seemingly unimportant.

Perhaps it would be a good idea to have your salesroom entirely redecorated. The walls may have grown dirty and dust-covered. Look things over from the eye of a prospective customer and see what effect it would have on you from that angle. Then go and do the needful thing.

Why not plan a Thanksgiving display of special order? Perhaps an arrangement giving a football atmosphere could be worked out. Use your imagination. Study the effects produced by your brother merchants in other lines. Do something!

FAIR WEATHER SALESMEN AND THE RAIN-INSPIRED KIND

At this season each year many salesmen become discouraged. Weather is generally bad. Everything tends to encourage putting off. Tomorrow may be a fine day. "No one wants to talk automobile on a day like this," is the universal sentiment.

But the real salesman delights in such obstacles. It gives him a chance to prove that he is superior to the weather and he realizes that if the majority of salesmen are "lying down" their lapses give him an extra opportunity to show his quality.

He lays his plans even more carefully than in good weather, and he finds his prospects at home—or office—when he calls. He finds that his energy and enthusiasm meet with instant response. It is easier to get undivided attention and, while action is often delayed, his work counts for more.

There is something inspiring about the man who comes along full of business and energy when others are putting off.

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AWAKE-NDISING WORLD

3 MEN---3 QUALITIES---3 YEARS

Trio of Youths Who Built up a $50,000 Business by Work, Hustle and Honesty—Free from Debt in Three Years—How They Did it.

In a little less than three years a certain firm of automobile dealers has built a business that is the wonder of their local competitors, and that has yielded them a substantial profit. They went into a territory where they were absolutely unknown and where the sales of the car they represented had been comparatively few and far between.

The members of the firm were—and are—all young men. They realized that they were going into a business that meant work. Not one of them had ever sold automobiles at retail or wholesale before. All of them, however, had driven cars and understood them, and they knew the car they were selling. They were not rich men's sons, but boys who had accumulated some money and were able to borrow enough more to obtain the necessary capital.

Methods, Not Experience, the Secret.

In three years they have paid back all they borrowed. They all draw a comfortable living salary and a division of the profits, if declared, would give each of them a good start in life. But more than that, they have a business the estimated value of which is close to $50,000. And all this has been done without previous experience in the line and during a period when many dealers have been kicking themselves because they ever went into the automobile business.

The secret of their success lies in three words—Work, Honesty, Hustle. They made up their minds that the business was one which required the hardest kind of work to succeed. They all entered it prepared to work—there was no room for loafers. One was assigned to the selling end as his special domain, one looked particularly after the mechanical department and the other exercised a general supervision over everything. In addition, every man of them boosted the other fellow and worked with him.

They were determined to succeed together and they have done so. Too many partnerships split on the division of work. This partnership succeeded on it. The spirit of mutual help and mutual confidence and mutual work did the trtick.

Square with Everyone Every Time.

At the very start they made up their minds that they would demand the highest type of honesty from themselves and would expect it from their customers. If there was an argument with a customer he was given the benefit of the doubt. "We felt many times as if we had been too easy," said a member of the firm, "but now we know that those little cases were small in comparison with the big business we have been working for; we have a sub-dealer organization that believes in us, works for us and trusts us completely. It has been built up by being square with every sub-dealer every time."

When you have done that—"been square with everyone every time"—you need not fear for the future. Dealers like that treatment whether it comes from the factory or from the distributer with whom they do business.

ADVANTAGES OF MAKING THE USED CAR A DEPARTMENT

There is a growing tendency toward specialization in the automobile business that bids fair to help solve many of its problems. The evidences of this tendency are not lacking in either small or large cities. You see it on every hand. Particularly is it noticeable in the methods of handling used cars.

In the small cities it is not at all uncommon to find garages where one of the salesmen devotes his entire time to the used car end of the business. When a customer with a trade-in appears he is promptly turned over to the "used car man" whose practical knowledge of used car values enables him to judge at once the desirability of the sale. In most cases his word is final and very often he has on his list of prospects a customer for every car he is called upon to take in.

In New York City Carl H. Page & Co., which sells Chalmers cars, has gone to greater lengths than this. A separate business has been established for the handling of used cars. It has its own establishment, its own manager, its own salesmen and its own repair and service department. The idea is a logical one and it has proven profitable. The used car salesman has but one subject on his mind—namely, used cars. He is thinking used cars all the time; that is his field and by specialization he becomes an expert in used car values and used car sales, whereas the salesman who attempts to sell new cars as well as used cars naturally gives the new cars the preference in his thoughts and activities. And the used cars become sidetracked waiting for a "better day."

WHY THE FARMER CAN OWN A CAR WHERE CITY MAN CAN'T

It goes without saying that the absence of garaging and kindred charges makes it possible for many people to own cars in the country who could not dream of doing so in the city. Most farmers are their own blacksmiths, so far as all ordinary work is concerned, and a well-equipped blacksmithing outfit, including a man's size forge, is to be found on nearly every good-sized farm. So the farmer gets very handy with tools and manages to keep away from the repair shop except when something of a serious nature happens, which is not often.

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"BOAT BODIES" NEW NOTE IN ANNUAL FRENCH SALON

No Radical Tendencies Apparent and "Sixes" Losing Ground—Lubricating Methods and Springs Show Greatest Changes.

Without revealing a very great deal that is startlingly new in design or construction, the 14th French Salon, which was opened in the Grand Palais in the Avenue des Champs Elysees, Paris, on Friday, October 17th, closed its doors on Monday, October 27th; it, however, served to make plain, among other things, that the changes that have been made abroad and that are being made, are no greater than those reflected by American practice; that the new cars are essentially the old cars refined. As was stated in Motor World two weeks ago, American makers were well represented, Ford, Hudson, Cadillac, Packard, Hupmobile, Buick, Case, Overland, and Mitchell cars being prominently displayed.

But if there is not a great deal that is new in mechanical construction, the French builders seem to have struck a brand new note in body building, the most startling feature of which is the appearance of the so-called "boat" body, a type that likely will be looked at askance by the American motoring public, but which appears to have caught on to an unusual degree abroad. In the various types of boat bodies the resemblance to floating conveyances does not stop with the appearance. It is carried deeply into the construction. Such bodies for the most part are built up of a number of "skins" of woodwork to resemble exactly existing types of fast marine runabouts. The theory of such construction is that it reduces weight, while the lines conduce to a reduction of wind resistance. In at least one such body, the seats are removable and the "hull" is fitted with a cockpit coaming in regulation marine style. In another respect, the silhouette of the modern car has changed. Hoods slope more sharply and there is a well-defined tendency to smooth down the sharp corners of radiators, though the V-type does not appear to be increasing.

Whatever else may be said for foreign tendencies in design it is certain that the six-cylinder motor has not gained in popularity in the slightest degree; the year is certainly not a six-cylinder year, as was freely predicted might be the case. If anything, the "six" has retrograded and the small, high-efficiency four-cylinder motor bids fair to very nearly boost it off the boards. In the popular sizes and even in the larger sizes, block casting has come more than ever to the front and for the main part valves are placed all on one side and are neatly enclosed. The most popular size motor would seem to be one with cylinders measuring about 80 mm. x 150 mm., or roughly, 3⅛ x 5⅞ inches, making plain that the trend toward still greater stroke to bore ratios apparently has ceased for the time being at least. In constructional details, few motors depart from the conventional, the general attempt being to obtain compactness, simplicity and clean design—three features which long have been recognizable in American motors.

With regard to essential components, double ignition has almost entirely disappeared, the magneto being deemed sufficient for even the largest sized motors. In lubrication methods there has been a concerted attempt made to increase oil capacity. Some engines now carry as much as 2½ gallons of oil, which is maintained in constant circulation, and in a noteworthy number of cases manufacturers have attempted to facilitate cooling by casting fins on the bottoms of their crankcases. Another suggestive development is that under pans fast are disappearing. Pump and thermo-siphon cooling are about on a par, though the balance gives evidence of swinging in favor of mechanical circulation in the not far distant future.

Despite the year or more of American experience from which foreign designers have to draw, they appear to be in no great hurry to embrace electrical equipment to anywhere near the extent it has been embraced in America. In a very few cases, makers are supplying electric lighting and engine starting apparatus as standard equipment, and in a few others they have indicated their intention of supplying it on demand. At any rate, that the movement in favor of such apparatus has been felt abroad is made plain by the fact that a number of foreign manufacturers now make provision on their engines for the mounting of lighting generators at least and some provide, too, for starting motors. Electric lights are fairly common, though the old oil lamp and the not so old acetylene lamp still are much in evidence.

Another feature of the foreign car in the abstract that is worthy of more than passing notice is the great preponderance of the Hele-Shaw clutch on Continental machines. British designers as a rule have not taken very kindly to the Hele-Shaw clutch, but across the Channel there has been a veritable landslide toward it. The general impression seems to be that, weight for weight and size for size, the Hele-Shaw clutch provides for greater flexibility and smoothness than does the cone clutch or the usual type of disk or plate mechanism.

Brakes, as a rule, are considerably larger this year than ever before, and the general increase in size is taken by those in the know to indicate a previous and conspicuous failing that only now has been recognized. There has been no appreciable increase in the number of makers housing both pairs of brakes side by side in the same drums, and there has been no increase whatsoever in the use of front wheel brakes; the practice, in fact, appears to be dying a perfectly natural death for want of sufficient demand on the part of the public.

In spring suspensions there probably has been more change than in any other single constructional detail. The transverse rear spring of the platform type has quite disappeared, though some makers still adhere to the single transverse semi-elliptic member. Likewise, the three-quarter elliptic rear suspension fast is giving way to the simpler semi-elliptic suspension incorporating long, flexible members. In one of the models on exhibition, for instance, the leaves are more than three inches in width, are extremely thin and are 60 inches in length, though this probably is the extreme. The tendency, nevertheless, is toward thinner leaves and more of them. The designers of Clement-Bayard cars have adopted a rather unusual suspension in which the rear members are double cantilevers, one cantilever member being mounted directly above the other. A peculiar action which is claimed effectually to damp out oscillation and provide the maximum of resiliency results.

Contrary to what may be expressed as the general expectation, the worm drive has not made great strides during the past year; some few makers have taken it up in a tentative sort of way and others have dropped it. On the whole, it does not appear to have either advanced or retreated in the general affections of engineers; it has remained practically stationary.

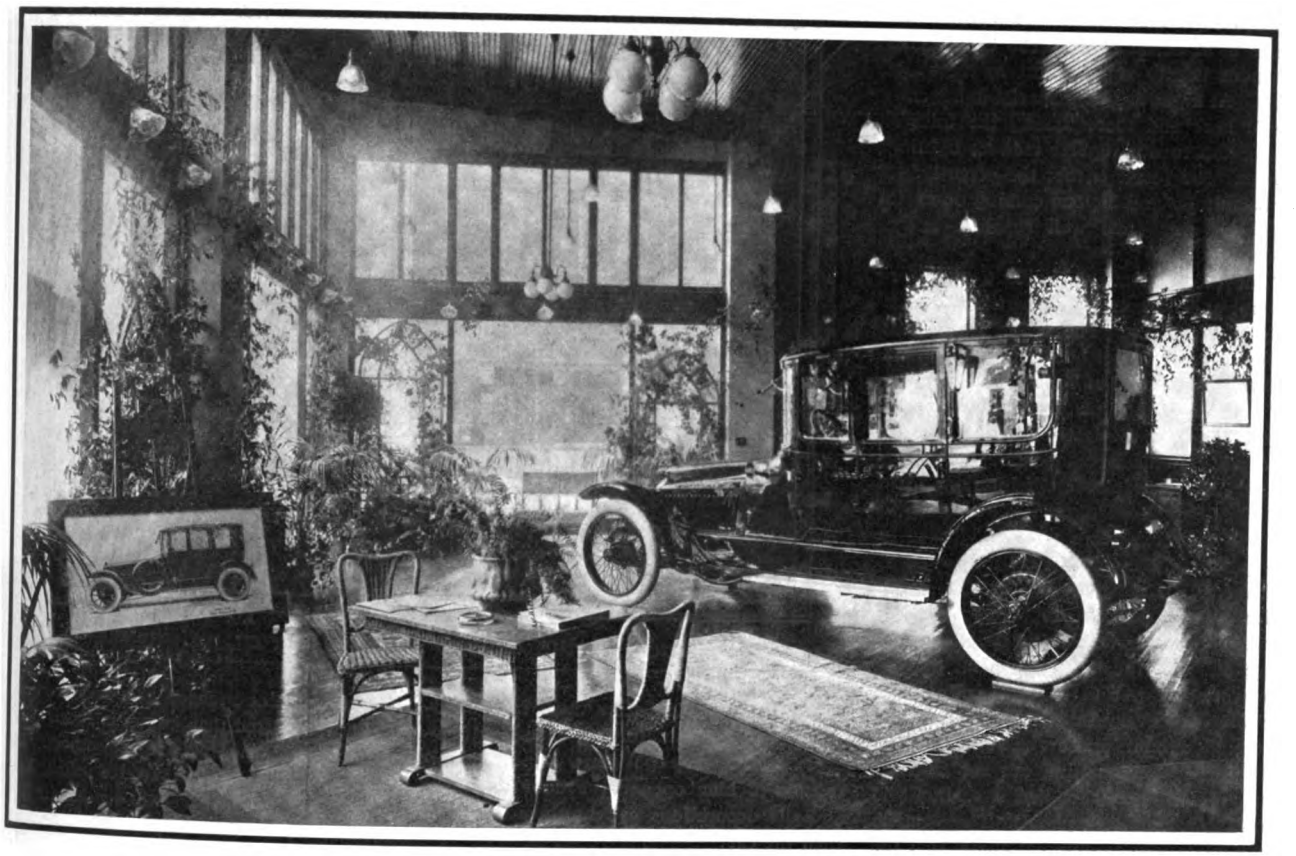
Here's a Toothsome Story from Winnipeg.

An eye for an eye, says the old law, and a tooth for a tooth—but as far as anyone has discovered, there is nothing in the Book about a tooth for a magneto contact. Yet that is almost what a Winnipeg man used. Anyway, this is the yarn: Two of them were out in the country in a car; one of them, incidentally, was a doctor, which may have had something to do with it. The sawbones—who must have been a tusk-yanker, too—was doing something to the magneto when he lost one of the platinum contacts. Promptly seizing his companion, he extracted from one of his teeth a modicum of the super-precious metal, made a magneto contact of it and put it in the machine and drove home. Winnipeg is a long way off!

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THE "SPECIAL WEEK" IN AUTOMOBILE SELLING

Detroit Dealer Worked Out a "Sedan Week" Along Lines of Special Sales in Other Trades—Finds Value in the Plan But Declares Thoroughness is Essential—How the Project Was Carried Out.



INSIDE OF BEMB-ROBINSON SALESROOM IN DETROIT SHOWING SETTING FOR "SEDAN WEEK"

When a dry goods merchant has a sale of dress goods or underwear it doesn't suggest anything in particular to some automobile dealers, for they are unable to see any connection between dry goods and cars. As a matter of fact, there isn't much connection between dry goods and cars, but there is a mighty relation between the merchandising methods which lie back of the selling of these two widely differing products.

That it is possible to develop special selling plans in the automobile trade and to have "special weeks" wherein emphasis is effectively laid on some one feature of the dealer's line or business has been demonstrated in more than one way and probably no better than by the enterprising Bemb-Robinson Co., the Hudson dealer in Detroit. This company believes that selling cars is as much a merchandising proposition as is the retailing of dry goods, and in support of its belief recently held a "Sedan week" of which the feature was the Hudson Sedan.

But the company didn't just roll its Sedans into the windows and let it go at that; it went still further—further than many dealers would think of going. And they say it paid. How it was done is best told by Walter Bemb himself.

"The department stores and cloak houses have their fall openings at which time they get special attention and do a lot of extra business," he said. "People go to the stores to see the things they want and buy. If we can get anyone to come to our showroom the battle is half over. Our showroom is our meal ticket because when you have a man in your showroom you get his undivided attention. There are no telephone calls and no people popping in and out to draw his attention from the business in hand. What could we do to get a number of people we regarded as prospective customers into our showroom? That was the problem, and this 'Sedan week' is one way we solved it.

"Last year we had a 'Limousine week.' It was a success. From it we learned a lot of things that helped make 'Sedan week' a greater success.

"How did we go about it? Of course, we had our general scheme thoroughly in mind and this is the way we worked it out: First, we planned our general decorative scheme. You will note that the motif is an Italian garden, vines everywhere, a fountain run by an electric motor in the corner with ferns and other green plants banked up around it till the only visible part of the fountain is the delicate little stream spurting up into the air. Of course, there are

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plenty of cut flowers, chrysanthemums predominating.

"Now, you will notice that our windows are ornamented with lattice frames and decorated with flowers and vines. The idea is to shut up the windows so that people will come in to see instead of trying to peek through from the outside. We want them here—inside.

"Our floors do not usually have those Turkish rugs, and that special garden furniture is in harmony with the decorations and adds beauty and comfort to the show room. At night, we have special lights concealed here and there among the foliage, in addition to our regular indirect lighting system. The result is that the place lights up beautifully and anyone coming down to view the cars feels well repaid for the trouble.

"But the decorations, while a very important and necessary part of the plan, are only a part of it. The whole thing is a selling scheme to get before the public and secure the attention of buyers.

"The invitation on special stationery was sent out to a selected list of prospects who we thought would be interested in a closed car. Besides these, invitations were sent generally to Detroit's 'four hundred.'

"The next step was a simple invitation to the public in the Sunday papers to 'come and see.' This same advertisement was run twice in the theater programs.

"Now, here is where many dealers would leave off. But the most important part of our work was yet to be done. On Monday morning every salesman was on hand at the showroom; and every night till 9:30, with our decorations and our car and our men, we were ready for business. But, you know how it is with people. They get so many invitations to different affairs that the response is naturally not large. Yet, if they are overlooked they feel slighted. But that printed invitation was only part of the idea.

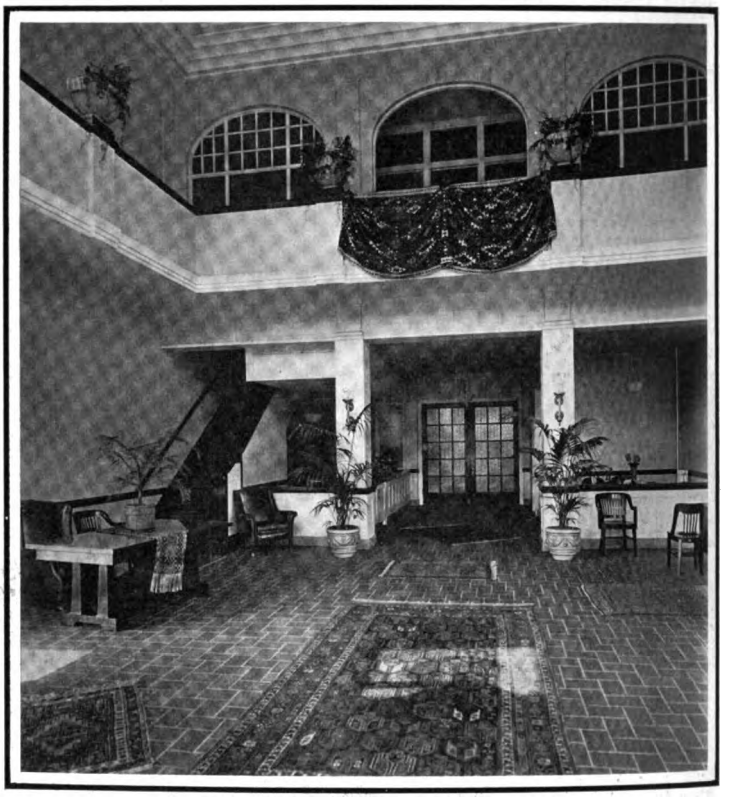
"Right away our men got busy on the 'phone calling up prospects they thought would be particularly interested. They not only extended personal invitations over the 'phone but offered to send a Sedan for them and bring them down here and take them home. You see, we had a car just for that purpose. Of course, most of these invitations were accepted, and thus the prospects got a demonstration of the car on the way down—and when they got here were quite prepared to agree that the Hudson Sedan was a beautiful and comfortable car.

"In many cases as many as four people in the family came down—father, mother, daughter and son. Could there be any better way to sell them all then to get them into our showroom at such a time? Could there be any stronger appeal to their vanity than sending after them in a handsome car with a uniformed chauffeur driving? When they got here a porter uniformed in blue opened the door for them and the decorations caught their eye—and then the car!

"Most assuredly it has been a success. Sedan week started Monday, and up to Friday we sold three Sedans. The week has been one continuous downpour of rain—and you know the effect that ordinarily has on salesmen. If we had not had 'Sedan week' it would have been a dead week. Instead, our men have been full of 'pep' and enthusiasm. The whole store emanates success and up-to-date methods. Every man is alive and on his mettle. He dresses with even more care than usual and he has a definiteness of purpose that means business. Why, do you know that pretty nearly all the other dealers in town have been here to see how we were making out? It has been the talk of the town.

"So far, I said we have made three sales. Those are real orders, deposits paid down and immediate delivery ordered. Besides that, we have gotten very close to some people who will later be buyers. We are sure of that. Every Hudson owner feels pleased and not a few of them have dropped in and suggested that we get in touch with some friend who is a likely prospect. In short, this plan of concentrated selling has worked so well that we will continue it for another week. And we expect to follow it with other schemes that are just as practical later on."

INVITING "ATMOSPHERE" OBTAINED IN A SALESROOM



SOUTH BRANCH OF THE CHICAGO ELECTRIC CAR CO., IN CHICAGO, ILL.

Bright Headlights Challenge to Hawk.

The hawk may have been arguing in the only way he knew for headlight dimmers or he may have been out "on a bat," but when he tried to pull Thomas Lane Ross, of 1524 State street, New Orleans, out of the car in which he was riding last week, Ross spent a strenuous few minutes.

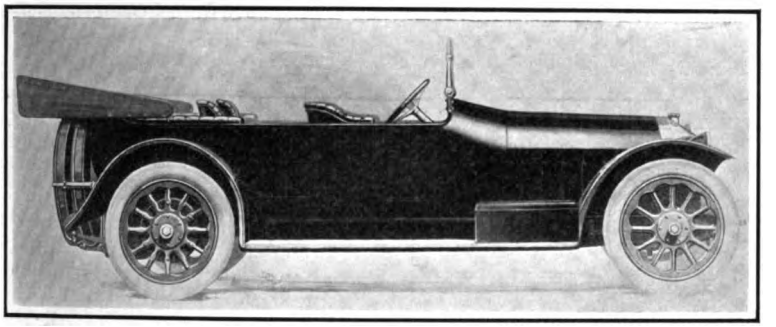
He was riding with Dr. C. A. Bohne on the West End road when the hawk appeared in the cone of light ahead, swooping at the headlights; but his aim was bad. The bird missed the lights, so grabbed at the next object in line, which chanced to be Ross's arm. Ross fought to throw off the bird and the physician increased the car's speed, but it was some distance before the sharp-taloned hawk could be beaten off. Even then the bird made another swoop at the car but missed and quit the battle.

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PATHFINDER TAKES TRAIL WITH SIX-CYLINDER MODEL

Unexpected Addition to Line Has Unusual Details—Electric Starting and Lighting and Four-Speed Gearset Direct on Third.

When the Motor Car Mfg. Co., of Indianapolis, Ind., some three or four months ago, made known the fact that its four-cylinder Pathfinder car had measured up so well in the past that it was considered good enough to stand as it was, with some minor improvements, not a word was allowed to escape to indicate that a brand new model was in course of preparation, and so, in the description of the single four-cylinder Pathfinder chassis with its seven bodies, printed in Motor World for July 24, there was no mention of any but that one model. It just has transpired, however, that work has been quietly proceeding on a six-cylinder machine, developed along independent lines and bearing little resemblance to the "four" that heretofore has been the sole chassis of the Pathfinder line. The price of the "six" is $2,750.



PATHFINDER SIX-CYLINDER MODEL WHICH LISTS AT $2,750

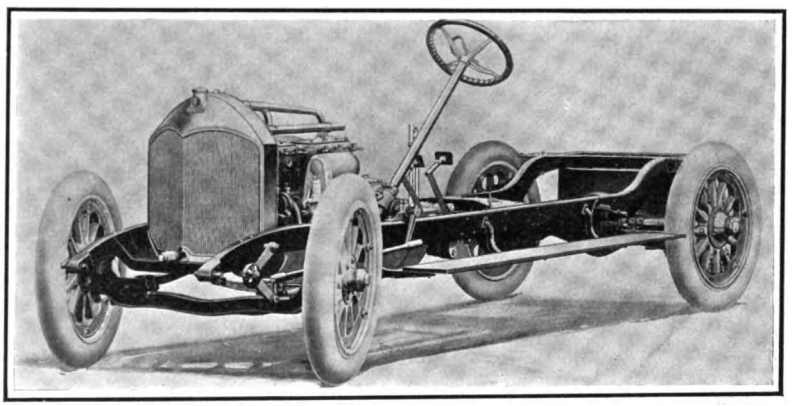
While the new car, which is fitted with a touring body for seven passengers, may be said to resemble the older model in that it is of the flush-sided, straight-line type, and otherwise is quite in keeping with the most recent ideas as to what a modern car should be, it differs outwardly from the "four" in that it has a V-shaped radiator with a pointed hood of polished metal surmounting it and has no side lamps built into the long cowl, which is raked at an easy angle that harmonizes well with the long lines of the body. The machine is distinctly in the big car class, as its carrying capacity and the wheelbase length of 135 inches clearly indicatea; and if further proof is required it is to be found in the fact that the tires are 35 x 5 inches all round.

The motor has its cylinders cast in blocks of three, which construction is in no small degree responsible for the fact that a 39-inch hood is long enough to house the engine. The cylinders are of the L-head design with a bore and stroke of 4⅛ x 5¼ inches, giving a formula rating of 40.9 horsepower, which, of course, is considerably below the brake horsepower because of the long stroke. Intake passages are cored in the castings, so that a simple V-shaped manifold from the carburetter is all that is necessary; this manifold is hot-water-jacketed, affording no opportunity for condensation of fuel when the motor is warmed up. The valve mechanism is on the right side of the motor and the stems and springs are enclosed, two aluminum covers permitting access when necessary. Vent holes in the casing act as breathers, and the arrangement results in the constant lubrication of the valve stems and tappets by a spray of oil from the crankcase. The camshaft is made with its valves integral.

The oiling system includes two plunger pumps driven by special cams on the camshaft, one on each side of the middle camshaft bearing. Oil under pressure is forced to the bearings and timing gears and then drains into the splash compartments which prevent the oil from running to one end of the crankcase on grades. Scoops on the connecting rods serve to splash the oil to the cylinders. A float indicator shows the height of the oil in the reservoir. Water is circulated by a large centrifugal pump entering the cylinder jackets under the valves.

The motor carries the electric lighting and starting apparatus, the starting motor having its shaft in line with the pump shaft. Connection is established through an overrunning clutch and Gray reduction gear. The pump-shaft is connected to the crankshaft by a chain of the "silent" type. The generator, which is a separate unit ,is mounted on top of the starting motor and is driven from the pump shaft by a small chain, also of the "silent" kind.

The power plant is mounted as a unit on a three-point support. The clutch is a multiple disk, running dry, with raybestos facing, and the gearset provides four speeds, the direct drive being on the third with the fourth as an overstep. Control is through a centrally located ball-handled lever. The propeller shaft is enclosed in a heavy torque tube with its forward end forked and trunnioned under a cross frame, the rear end being fast in the housing of the full-floating rear axle. Despite the employment of this tube, a universal joint has been placed between the propeller shaft and the pinion shaft, in addition to the joint at the forward end, just back of the gearcase. The bevel gears give a reduction of 3¾ to 1. Both emergency and service brakes are in drums on the rear wheels and are operated by rods running inside the frame.



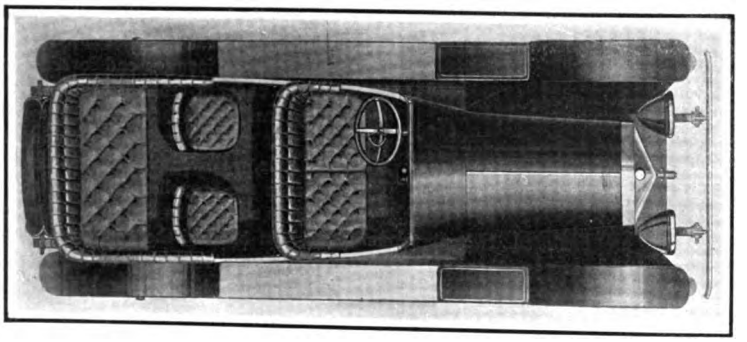
PATHFINDER CHASSIS SHOWING NEW V-TYPE RADIATOR

The rear springs of the car are three-quarter elliptics, no less than 54 inches long, and are underslung, the rear end of the frame having a kick-up to clear the axle. The front springs are semi-elliptics and are 39 inches long. Rear springs are shackled at both ends to permit the greatest freedom of movement. The frame, of open-hearth steel, has a maximum depth of 5 inches and has a gradual upward curve at

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the front, necessitating large forgings for the spring hangers, which also support the adjustable bumper.

The steering wheel, 18 inches in diameter, is on the left side; the gear is a Gemmer. The clutch and brake pedals are adjustable by means of pinching bolts. The starter is thrown into operation by means of a pedal. At the rear of the cowl the instrument board is mounted, and under the cowl is the 18-gallon gasolene tank. The greater part of the weight of the tank is carried by two brackets riveted to the tank in front and secured to the topmost toeboard, while bracing is provided by two rods which pass through heavy tubes which run through the tank from front to rear, near the top, and permit the nuts on the brace rods to be drawn up tight without causing pressure on the tank itself. The rods are much smaller than the tubes, so that there is considerable flexibility in the



SEATING ARRANGEMENT OF PATHFINDER "SIX" SHOWING TAPERED HOOD

mounting. The tank is easily removed after the instrument board has been taken out, which is not a difficult task. A light steel cross members of channel section serves as a support for the board, which carries the gasolene filler, ammeter, eight-day clock, ignition switch operated with a Yale key, light switch and speedometer. The speedometer is driven from the propeller shaft.

In addition to the instruments and other equipment referred to, the new Pathfinder equipment consists of a tool box on the right running board, where it corresponds with the battery box on the opposite side, a special waterproof storage compartment at the rear accessible when the rear cushions are lifted, single-piece built-in windshield that can be folded down over the cowl or placed in the ventilating position, top with side curtains and cover, electric headlights in which two small 4-candlepower lamps near the top take the place of side lamps, electric horn, adjustable foot-rests, folding robe rail, motor-driven tire pump, double tire carrier, an extra rim and a complete tool kit.

FEELING SALEMAN'S BUMPS TO SEE IF HE IS ANY GOOD

Large Sales Company Adopts Phrenology in Selecting its Workers—"Goes the Limit" in Making Sure to Get Good Men.

"Want to hire a salesman?"

"Maybe. Come here till I feel your bumps."

The salesman who wants a job squats down in front of the sales manager, the latter maneuvers over the applicant's skull like Jimmy Valentine "cracking a crib" and casts a weather eye at the aural and nasal appendages of the squatter.

"Take this blank over there and fill it out."

The applicant does as directed, although the questions to him look like "plain darned foolishness." He brings back the blank filled out as directed.

"No, you won't do. Sorry; we have a vacancy, but you don't come up to specifications."

"Why not? What's the matter?" demands the astounded one.

"Well, if you must know, your bump of combativeness indicates a lack of ability to meet customers successfully; your bump of destructiveness is a regular Gibraltar, and where your bump of mirthfulness should be there's nothing but a hole. Your answers to the questions on the blank indicate that you are not up to the standard we require in our salesmen, so we can't use you."

"Thank God!" exclaims the salesman, as he watches the sales manager out of the tail of his eye and sidles toward the door.

Intensified salesmanship? Maybe. Anyhow, one of the largest sales organizations, the American Multigraph Sales Co., in America has gone in for phrenology in its selection of salesmen, and studies the exterior indications of character in choosing its men. Of course, it doesn't necessarily follow that the sales manager is an expert "bump feeler," but the company does require the filling out of a blank and does make a study of phrenologic character indicators.

The outcome of the innovation is as yet undetermined, for it is new with the pioneer in this field. It will be generally conceded that too great care cannot be used in the selection of a sales force, and if the sales organization's methods appear radical or extreme it may be suggested that they are but the development of a determination to employ only the most capable men.

Anyway, if the plan proves popular and is generally adopted, it is up to some salesmen to grade off a few undesirable bumps and fill in a few cranial dales and valleys, even if they have to do it with a tack hammer.

Ford Spoils Pretty Cyclecar Story.

Henry Ford has spoiled another pretty story in which he was made appear the central figure. Like many others, the story was brought from Detroit to New York, where it was put into print.

According to the narrative, Ford drove up to the Hotel Pontchartrain in a cyclecar, and as the astonished crowd rushed out to view it, Ford, so says the story teller, laughingly remarked that he was preparing to build them for $100. Straightway, according to the same narrative, word was passed from banker to banker that no money should be loaned for cyclecar ventures, which are being projected in Detroit at the rate of about 10 a week.

According to James Couzens, and others high up in the Ford company, the story is true except to the extent that Ford has never built a cyclecar, doesn't own one and has never driven up to the Pontchartrain in one. Ford is not worrying about cyclecars; it is not necessary.

Two Honorables Attend Hupp Banquet.

There was real "class" to the second annual banquet of the Hupp Motor Car Co.'s European dealers, which was held during the Paris show. It was of sufficient importance to be attended by the Hon. Myron Herrick, ambassador to France, and Hon. Charles Denby, American consul-general at Vienna, both of whom addressed the assemblage. There were 60 plates at the banquet, which was presided over by J. L. Poole.

To Enlarge Batavia Rubber Plant.

The Batavia Rubber Co. is making ready to erect a two-story addition to its plant in Batavia, N. Y. It will be a two-story and basement structure, 85 x 101 feet, and will cost approximately $35,000.

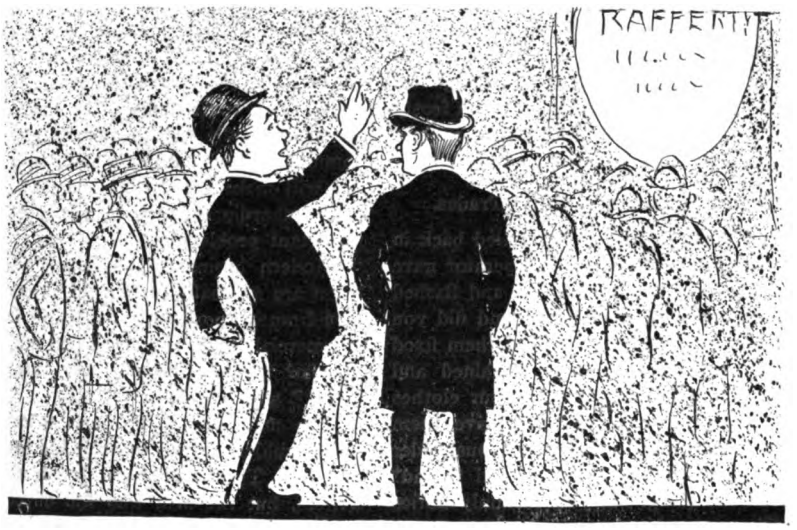
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DOING THE THINGS YOU'RE NOT REQUIRED TO DO

Little Deeds That Are Not Compulsory But That Breed Good Will—Reilly Mixes Election Returns and a Rafferty Man's "Hurroos" with a Discussion of Why One Dealer Garageman Failed.

The drunk who stood behind Reilly let out a wierd and maudlin "Hurro-o-o-o!" He was unusually strong on the "O-o-o-o."

He had begun "Hurro-o-o-ing" earlier in the day when he knew what he was "Hurro-o-o-ing" about, and even when he propped himself up against his neighbors in the crowd which formed in front of the News bulletin screen shortly after the polls closed he had a more or less definite idea as to why he had embarked in the "Hurro-o-o-o" business.



"I'M F'R RAF'R'TY!" HE GURGLED. "RAF'TY'S GOOD MAN!" AND THEN, "HURRO-O-O!"

The Rafferty Man "Hurro-o-s" Again.

But it was now well after 9 o'clock and he was "Hurro-o-o-o-ing" for Hurro-o's sake. "I'm f'r Raf'r'ty!" he gurgled. "Raf'ty's good man." And then, "Hur-o-o!"

"Who's Rafferty?" asked Reilly.

"Raf'ty's—he-sh — he-sh——" Just then the operator flashed another bulletin, whereupon the drunk left off his explanation, for every bulletin by now seemed to be the signal to uncork a fresh "Hurro-o-o-o!"

"Whash it shay?"

"Breckenheimer carries the tenth by four hundred," read Reilly.

"Thatsh tough—washted perfectly good 'Hurro-o-o' on a Dutschman," lamented the Rafferty rooter—and he didn't overcome his grief for several minutes.

The Hurroo boy was still muttering his chagrin at having inadvertently cheered in the wrong place and Reilly was nervously waiting for the next "Hurro-o-o" to hurtle over his shoulder and into his ear when Ben Doyno passed in the narrow lane which the police were keeping open for traffic.

"Oh, Ben!" shouted Reilly.

"Come on, come on! What are you going to do? Hang around here all night?" and Doyno seized Reilly's arm and dragged the little dealer not unwillingly away from the Rafferty man. "I'll tell you what we'll do," declared the supplyman. "The Progressives are running a bulletin across from my store. Let's go up stairs and sit in the window."

Square Dealing that Helped Candidate.

"Armstrong, on the Progressive ticket, was saying his garage business was getting so big he might have to give up trying to sell cars," remarked Reilly, when the two had settled down in comfort with an unobstructed view of the big white sheet on the building across the street.

"He's done well over there."

"Some of my owners garage with him," continued Reilly, "and they certainly speak well of him. His own owners wouldn't buy any other car on a bet. He is winning his election on his business reputation. He's thorough, businesslike and plays straight."

"He undermined the Mackey Garage in short order," asserted Doyno.

"Why shouldn't he?" demanded Reilly. Mackey was a bum garageman and dealer, if ever there was one."

"So?" asked Doyno, with as much interest in the bulletin as in the conversation.

Too Exacting Tactics Lost Trade.

"Quite so," replied Reilly, who seemed capable of talking, reading bulletins and smoking all at the same time. "He lost trade by his tactics and principally because he seemed possessed of a streak of stinginess or too scrupulous exactness. He was perfectly willing to do all that was required of him, but he wouldn't do a darned bit more."

"How's that?" Doyno was still gazing intently out of the window.

"One instance I remember was that of a man who sent his car in to have the radiator fixed," continued Reilly. "Mackey did the job well enough, but when the owner went after the car it was turned out to him not only with dust on the mudguards and generally dirty all over, but with streaky stains on the hood where the water in the radiator had slopped over.

Didn't Clean Car Because not Ordered.

"The owner looked the wagon over and wanted to know if he couldn't have it washed. Mackey said he could. The owner wanted to know why they hadn't cleaned it up a little bit before they let it out of the garage. Mackey said no orders had been given to clean the car and that he didn't want to assume responsibility in doing unspecified labor.

"There were numerous things like that which didn't help him to win a loyal trade; he seemed to be looking for excuses not to do things instead of seeing how much he could do for his customers. Another owner was out one rainy day and when the chauffeur left the car in the garage that day he left one of the rear tires flat. It so happened that the chauffeur suffered an accident that night and no one went near the car for two weeks. The owner had no other driver, so the car stood there.

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"One day, after two weeks had passed, and it seemed that the driver would be abed a long time, the owner of the car dropped around at the garage to look at his car. He found it on the floor space allotted to it, standing exactly as the chauffeur had left it. The car was still resting on the rim and the tire was in fine condition.

Pleaded, "I Wasn't Supposed to Do It."

"The car owner asked why the garageman hadn't taken the tire off; he asked what they meant by letting a car stand two weeks in that condition. Mackey said the chauffeur generally took care of the tires and such things and that he hadn't received any instructions to take it off. The owner said he would issue instructions that very minute, so Mackey told a man to take it off. The man had a hard time getting it off and, at that, the tire was very nearly ruined.

"The car owner didn't seem enthusiastic over the service he was getting from Mackey, and he moved to Armstrong's garage. Mackey couldn't understand it; he couldn't see why he should be blamed for not doing a thing when he hadn't been told to do it and wasn't supposed to do it. He never suspected that there was such a thing as common sense and that this should have enabled him to do a thing or two even if he didn't have written instructions."

"Don't wonder he lost trade. That doesn't sound much like Armstrong's way of doing business."

Sure Car is "Right" Before it Goes.

"You're quite right it doesn't," asserted Reilly. "Armstrong is as much the opposite as a man can be. Supposing a man takes his car into Armstrong's garage to have a new crankshaft put in. Armstrong has the repair work done and before he gives the job an official O. K. has it cleaned up. There's nothing that makes a car owner feel quite so good as to have his car look spic and span after it has been repaired or overhauled. And what's more, this washing or cleaning isn't necessarily an added expense to the garageman.

"The average repair bill amounts to several dollars and it generally is of such a size that the addition of a dollar or whatever it may be for cleaning isn't noticed when the owner sees the bill. The little time that it takes to clean the car isn't of much consequence if included in the labor charge. And what's more, I don't believe there are many owners who would kick if they found the car had been cleaned even if they did have to pay a little extra for it. Of course, if a man is garaging somewhere else he might object. But many times a little cleaning off of dust would make a great difference in the looks of the car and in the attitude of the owner."

"H—— of a system!" ejaculated Doyno.

"A lot of business men—especially garagemen and dealers—fail to appreciate the value of small details in the retaining of good-will. Good-will is a big business asset, so big that it is sometimes worth hundreds of thousands of dollars, and its retention should constitute a goodly portion of a man's activities.

"Did you ever go into a United Cigar Store and see a sign which said, 'Yes, sir; we have stamps'? And do you suppose there is anything that compels a cigar store to sell stamps? There isn't a cent of profit in them, and there is no reason in the world why they should sell stamps except that it is but one instance of looking for a chance to do customers a favor instead of hunting for reasons not to do things for them. How many times do you get a frosty look when you ask a druggist or a cigar man to sell you a stamp?"

Similar Instances in Other Trades.

"Yes," said Doyno, as he settled back in his chair while the spotlight operator gave his bulletin-writing arm a rest and flashed a few pictures of candidates, "and did you ever take your shoes out to get them fixed and have them come back unshined and dirty? Or did you ever send your clothes out to get them pressed and have them come back with that same old suspender button hanging by that same old thread? It's a little thing, but you certainly notice it. The man who gets my laundry now—and I guess he's about the twentieth I have tried—advertises that he will sew on buttons and make any small repairs free of charge. I certainly appreciate it."

"There are a thousand and one little things a garageman can do for his customers that he literally isn't compelled to do," said Reilly, "but if he develops a habit of looking out for his customers they come to think immensely well of him. Stinginess never got anybody anything, and this 'I wasn't supposed to do it' attitude looks like the outcropping of either an inherent stinginess or mental blindness.

Applies to Individuals in Same Way.

"This applies to everyone—employes as well as employers. I guess you'll find if you look around that the employe who gets ahead isn't the man who does just what he was told and then stops. Any machine can do that much, but it requires intelligence to go a little beyond orders, and the man who puts himself in the machine class generally is so regarded and stays there, whether he be working for a corporation or the public.

"Now Armstrong——"

"Let's get out of here; it's all over," interrupted Doyno as he started out.

"As I said," continued Reilly on their way down the street, "Armstrong's one big—— Good Lord! Look!"

Doyno looked. On the opposite corner Reilly's Rafferty acquaintance was moored to a lamp post. It was on a corner where many cars turned westward off the main street. Every time the headlights of a turning car illuminated the Rafferty man's face it roused him. And every time he was aroused he gave a, by this time, faint and hound-like "Hurro-o-o-o!"

"Merchandiser" to Supplant "Ad. Man."

That what business today calls an "advertising man" will in the future be replaced by a "merchandiser," is the statement made by Tim Thrift, president of the Association of National Advertising Managers; the "merchandiser," he states, will not only handle such matters as are now commonly delegated to the advertising man but will make the writing and placing of copy subordinate to a bigger and more important problem.

"Modern business methods and competition are gradually forcing the advertising man from his position of importance in the commercial world and developing a higher type of publicist, namely, the 'merchandiser,'" said Thrift.

"The man who to-day buys space and writes subject matter to fill it has had his best day. There will always be advertising writers, but the man who will direct the paid publicity campaigns of big business in the future will be an organizer, an analyist, a psychologist and a distributing expert.

"Writing advertisements and buying space to put them in is a mere detail," declared Thrift. "The great need to-day is for men who, from an advertising standpoint, can pass upon the character of a product, its appearance in the eyes of the public, the requirements of consumers and the best methods of distribution.

"This expert will not conflict with the sales manager. That official has to do with men and methods of dealing directly with the market. These two men will cooperate, each being necessary to the other. The merchandiser will spend much time in the factory or mill, studying the methods of production.

"He will travel through districts where his product is being sold, studying the needs of consumers, their peculiarities, competitive conditions and distribution facilities.

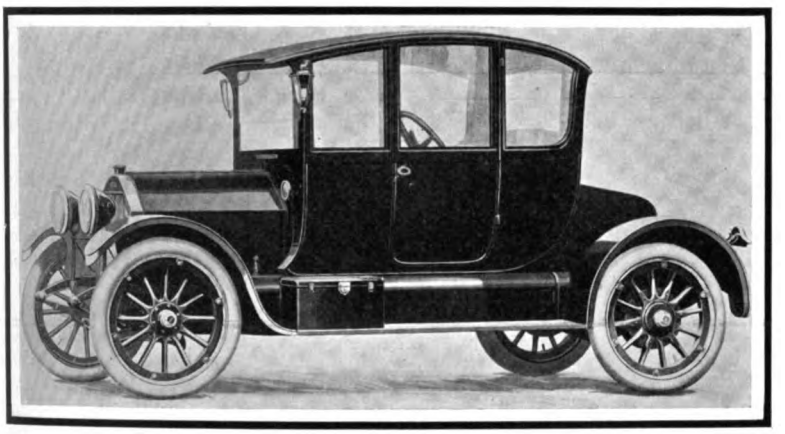
"The merchandiser will be a valuable help to the sales manager in the inauguration of contests and other schemes for 'gingering up' the sales force and stimulating demand for the product."

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MARION LINE LENGTHENED BY ENCLOSED BODY MODELS

Coupe and Sedan on "Four" and "Six" Chassis Break Succession of Open Bodies for First Time—Effective Seating Plans.

It is some eleven years since the building of Marion cars was commenced, and in all that time the manufacturers contented themselves with turning out machines of the open body types. No enclosed cars were included in the regular series. Now, however, the Marion Motor Car Co., of Indianapolis, has turned its attention to the production of enclosed cars, with the result that two new body types have been added to the Marion line. One is a coupe and the other a sedan; the coupe is mounted either on the four- or six-cylinder chassis, while the sedan is mounted only on the larger chassis.



NEW MARION COUPE MODEL ON FOUR-CYLINDER CHASSIS

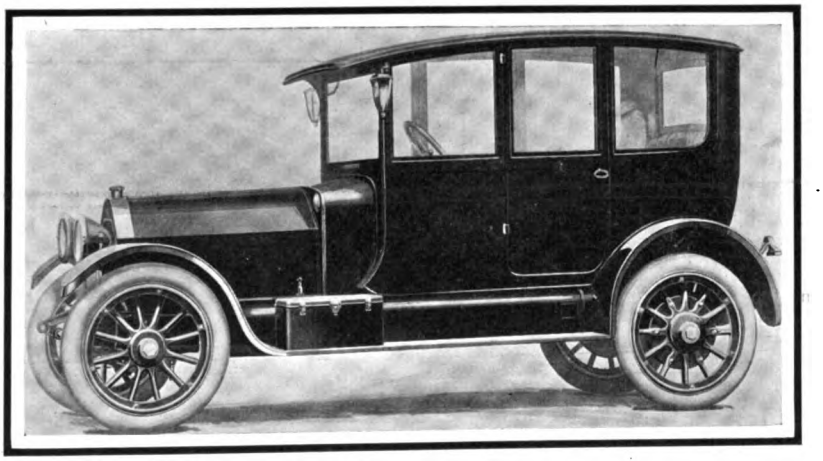
The coupe, which seats four passengers, is designed with no little skill, and it is entirely devoid of the top-heavy appearance that is so easily imparted to this type of car by faulty laying out. The exterior is simple in its smoothness, but it is the simplicity that comes of much hard work in "fairing up" the lines, as a naval architect would express it. The seating arrangement is neatly worked out. The wide rear seat accommodates three persons, including the driver, who, however, is seated about six inches further forward than the others, so that his view will be unobstructed, while he is not too far away for sociability. The fourth passenger occupies a folding seat attached to the front panel of the body.

In the sedan the lines of the coupe are carried out on a larger scale, the general effect being much the same—that is to say, the family resemblance is plain. The seating arrangements are planned for five persons. Three sit side by side on the roomy rear seat, while the other two, one being the driver, sit in comfortable stationary chairs forward.

The enclosed models are equipped with complete electric lighting and starting systems, the lights being arranged in the most convenient way for closed cars. All the instruments are conveniently placed in front of the driver, who controls the car from the left side.

As for the mechanical features of the Marion "four" and the later addition to the line, the "six," they doubtless are well known, for they have been described in detail in Motor World under date of August 21. As a memory refresher, however, it may be said that the "four" is very similar to the corresponding car of the preceding series, while the newer "six" is built along lines that have been proved and tried by time and service and are in no wise experimental or freakish. The motor, of the L-head type, has its cylinders cast in two blocks of three each and the crankshaft has three hand-fitted bearings. The appreciation of the Marion people of the advantages of a long motor stroke is indicatetd by the bore and stroke measurements, which are 3¾ and 5¼ inches, respectively. The "formula" rating is 33.75 horsepower, and as this does not recognize the stroke factor it is clear that the horsepower developed is considerably in excess of that figure. Quiet running is greatly assisted by the employment of a "silent" chain for camshaft drive and spiral gears for the magneto and pump.

The elements through which power is transmitted include a nine-plate disk clutch running dry, a three-speed selectively controlled gearset with centrally located shifting lever, and propeller shaft bevel geared to the full floating rear axle. A pecularity is that drive from the axle shafts to the wheels is not through the usual dogs fitting into notches in the hubs, but through flanges formed integral with the shafts and bolted to the wheel hubs. Of particular interest in connection with enclosed bodies, which are expected to afford the utmost luxury in every way, is the fact that the suspension of the Marion cars consists of springs made from English Sheffield steel, three-quarter elliptic in the rear and semi-elliptic in front. The spring bolts are hollow and contain sufficient oil to provide lubrication for months at a time. The wheelbase of the "six" is 124 inches—sufficient for easy riding but not too long for a town car—and the tread is, of course, the usual 5 6inches. The electric starting and lighting system is the Westinghouse. In the matter of equipment the new Marion models are well provided; it is unnecessary to go further than to state that each car carries all the accessories that usually are listed as "complete equipment," besides a good many things that often are missing from cars considered to be well "found."



SIDE VIEW MARION "SIX" MOUNTING NEW SEDAN BODY

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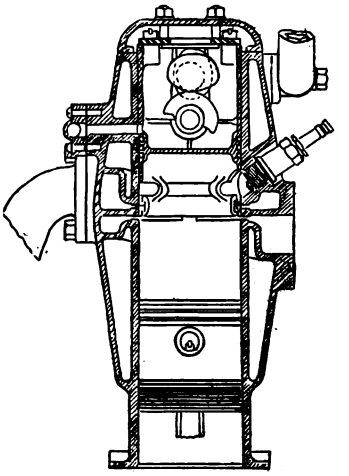
PISTON VALVE MOTOR MADE BY POPPET MOTOR MAKERS

Carter Valve Gear Includes Piston Which Replaces Cylinder Head—Large Port Openings and Unusual Construction.

Whether or not poppet valve motors ever will be displaced, or even cast into the background, by motors with valves of other types is something that time alone can tell; there can be no question ,however, as to the activity and ingenuity of those who believe that there are valves as good as, if not beter than, the poppet. The most recent non-poppet type to be commercialized is the Carter piston valve motor, of which the Model Gas Engine Works, of Peru, Ind., secured control some time ago. A special factory for building this motor is being erected in Pittsburgh, Pa., and meanwhile the Peru factory will manufacture one size, which is shown in the accompanying illustration.

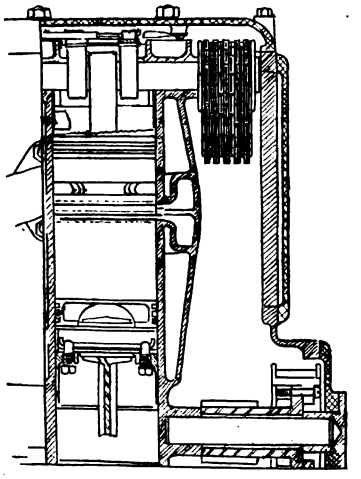
Apart from the valves, the motor is of conventional design. The valves take the form of pistons and are housed in upward extensions of the cylinder bores; the valve pistons are of the same diameter as the working pistons, though somewhat longer. In each valve there is a diaphragm which completely closes it about one-third of the way up, and the top of the valve is crossed by a pair of parallel bars extending crosswise of the cylinder. Just above the diaphragm there is a pin similar to the piston pin, carrying a roller. The walls of the valve are slotted above the pin and through the slots the camshaft passes, extending along all the cylinders and passing through all the valves. The camshaft carries three cams for each valve, one bearing on the roller on the pin and the other two, which are duplicates, on the bars that cross the top of the valve. The cams of course give the valve its reciprocating motion, and they are so designed that the valve is permitted no motion other than that imparted by the cams—that is, it is positively driven in both directions.

It is the lower end of the valve piston that covers and uncovers the ports, which are placed one above the other, intake on top, and extend all around the cylinder except for narrow bridges. The lower part of the piston valve is in the form of a ring connected to the upper part by bridge pieces inside and relieved so that it does not touch the cylinder walls, packing rings of special design being fitted and coming flush with both the edges. In the accompanying illustration the exhaust port is open. As the valve descends the exhaust port is cut off and the intake uncovered, opening into the space between the upper and lower sections of the valve. The total valve travel is half an inch. The power required to operate the valves is said to be practically nothing, for as the valves move



CARTER PISTON VALVE ENGINE

upward to uncover the exhaust ports they are pushed by the pressure within, while the partial vacuum on the intake helps to bring the valves down.



SHOWING CAMSHAFT DRIVE

The cylinders are cast en bloc, and the camshaft is covered by a housing that bolts to the top of the cylinders. The "silent" chain through which the camshaft is driven also is enclosed in a housing at the end of the engine; these chains are employed throughout the engine in place of gears.

It will be noticed that the cylinders have no heads, as cylinder heads usually are understood. The piston valves take the places of heads and the explosion pressure, of course, is borne by the camshaft which, as the illustrations show quite plainly, is made extraordinarily heavy, for a camshaft, and is mounted in bearings that are of unusual length. For the same reason the cams and rollers are heavy and have broad bearing faces.

Ball Bearing Lore in Condensed Form.

When it comes to concentrated and condensed utility, with all the facts at hand and no frills, the latest price list of the J. S. Bretz Co., of 250 West 54th street, New York, is worthy to stand in a high place as an example of what a utilitarian price-list should be. The company imports F. & S. ball bearings, which are made in Germany, and the new list, covering the various types, gives in tabular form about every sort of practical information that could be asked for. The outer diameter, bore, width, number of balls, size of balls, normal load in pounds and running speed of each bearing are given, and while most of the dimensions are in millimeters, there is a reference table of equivalents in inches, to make things easier for Americans.

S. A. E. to Discuss Rim Standards.

To consider further, and to discuss the suggestions of its members, the Pleasure Car Division of the Standards Committee of the Society of Automobile Engineers will meet on Wednesday, Nov. 12th. The meeting will take place at the headquarters of the society, 1,790 Broadway, New York City, and is scheduled for two o'clock in the afternoon.

One of the Possible Noise Makers.

A possible cause of noise in an engine lies in the looseness of the studs or of the yokes which hold the valve guides in place in the crankcases. A little looseness might be quite sufficient to start a slight rapping noise and, moreover, there would inevitably be an increase of wear on the moving parts of the valve lifter.

One Cause of Difficult Starting.

A gradually increasing difficulty in starting a motor may result from the leaking of the valves, which not only allows the gas to escape and so reduces compression, but also allows air to leak in and upsets the proportions of the mixture—to say nothing, of course, of reducing the power of the engine.

Sopping up Water with Alcohol.

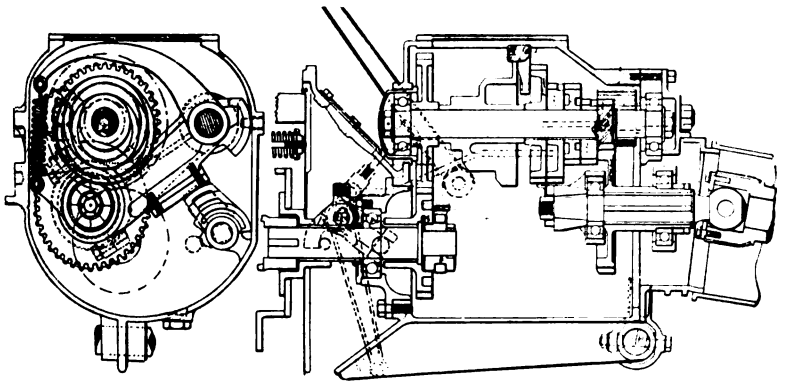
The strong affinity that alcohol and water have for each other makes alcohol useful where it is desired to dry anything rapidly. If the wet surface is swabbed with alcohol the spirit will take up the water and will itself dry off quickly.

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HERE'S A SLIDING GEARSET THAT HAS ECCENTRIC GEARS

Shifting Mechanism that Has Extraordinary Flexibility—Direct Drive on High Without Unmesh-Gears—How it Works.

The idea of a gearset in which changes from one speed to another are made by the usual method of sliding gears on their axes, but in which, nevertheless, the gears always are in mesh, seems contrary to the more or less established order of things. Constant-mesh gears with individual clutches are old friends and most numerous of all are the gears that slide out of mesh before sliding in again, but the Ross Transmission Gear Co., of Detroit, Mich., has developed a system in which a single gear on the tailshaft actually slides from one to another of a cone of gears of graduated sizes, but never is out of mesh except when in neutral, and does not miss a single revolution in the application of power when shifting from lower to higher speeds, or vice versa.



ROSS AUTOMATIC CONTINUOUS MESH SLIDING GEAR IN SECTION

There are three principal elements in the Ross gearset; the primary shaft, driven from the motor, the countershaft carrying the cone of stepped gears and the tail-shaft, which is connected to the propeller shaft through a universal joint. The primary shaft drives the countershaft in the usual way and carries on its slightly extended end one member of a jaw clutch. The countershaft carries three gears for first, second and third speeds, and between the first and second and the second and third are two eccentric gears—that is, gears so mounted that the countershaft passes through them considerably off center. These eccentric gears are so set that the teeth on the edge nearest the shaft are exactly aligned with the teeth of the smallest gear adjoining, while the teeth on the opposite edge of the eccentric gear, which are furthest from the shaft, are exactly aligned with the teeth of the larger gear on the other side. The whole cone is arranged so that it can be run either clutched to its shaft or free on it, the clutch operating automatically.

The tail-shaft carries a single gear called the master gear, and the extended end carries one member of a jaw clutch corresponding with the clutch member on the end of the primary shaft. The most extraordinary thing about the tail-shaft is that it can move in almost any direction—at least, it is capable of vertical movement and also can be moved longitudinally by virtue of an arrangement of splines and a sliding sleeve which carries the gear. The vertical movement is controlled by a cam on the countershaft forward the gear cone, while the sliding movement is effected by means of a hand lever, a connection with the clutch pedal or an electric shifter, the exact means of control, in other words, being optional.

In changing from a low to a higher speed the master gear on the tail-shaft is slid to the left. In the accompanying illustration the master gear is shown engaged with the low-speed gear on the countershaft. Adjoining the low speed gear is the first of the eccentric gears. If the countershaft is turned half a revolution this eccentric gear will come around until the teeth that are in line with the low speed gear teeth will be exactly in line with the meshing teeth of the master gear, which then can be slid from the low speed to the eccentric gear. As the ecentric gear continues to turn with the countershaft it, of course, pushes the master gear away from the countershaft; or, rather, it would do so if permitted to do so. As a matter of fact, the master gear and its shaft are moved, in exact conformity with the movement of the eccentric gear, by the cam on the countershaft, so that the tail-shaft follows the eccentricity of the off-center gear. The next half revolution brings the master gear, riding the eccentric gear, to the level of the second speed gear, at which instant it can be slid off the eccentric gear and into second speed. Exactly the same sequence is followed in going from second to third; the cam is operative only when the master gear is in mesh with the eccentric gears, of course, that being the only time eccentric motion is needed.

When the tail-shaft carrying the master gear is in third speed position the clutch member on its end is exactly in line with the clutch member on the primary shaft. Only a narrow space separates the two. By shifting the master gear a little further to the left—that is, to the left in the illustration, but forward in the actual gearset—the countershaft gears are freed from the countershaft and allowed to run idly upon it, while the primary and tail-shaft clutch members come together and lock, giving direct drive; all the time, however, the master gear remains in mesh with the largest of the countershaft gears. Of course, to change down the same operations are carried through in reverse direction. The changes are made very rapidly.

Neutral position, which is the only position in which the gears are out of mesh, is obtained by sliding the master gear to the right of the position shown in the illustration—that is, back of the lowest speed gear—and a still further movement in the same direction brings the master gear into mesh with the reverse idler, and then engages the clutch, which establishes a driving connection.

Mud that Hinders Proper Cooling.

There is such a thing as overheating a motor when it is driven in the most skilful manner, is in perfect order in every way and the radiator is full of briskly circulating water. The radiator may be coated and plugged up with dirt on the outside. Of course, it doesn't happen very often that a radiator will get so mussed up that it will not radiate properly, but it is possible and has happened, especially after a long run through very muddy roads. The mud helps along overheating effectively, especially when it dries, acting as an excellent insulator of heat.

Marking Side Curtains for Identification.

Picking out the side curtains of a car and getting the right ones in the right places when there isn't much time is often a temper-trying job, and it seems to be the rule that the pesky things act as if they were possessed of evil spirits. The spirits can be exorcized, however, by marking the curtains so that they can be identified on sight. A little white paint can be used to make neat letters or, if one is particular, the lettering can be stenciled on. The edges of the top should, of course, be marked to correspond with the curtains

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"PLAY SQUARE," REDFIELD'S ADVICE TO BUSINESS WORLD

Representative of Wilson Administration Reflects Views of Federal Government—Explains "New Ideals in Commerce."

When Woodrow Wilson and his assistants took the wheel of Uncle Sam's 90,000,000-passenger car there was speculation as to whether there would be need for extra shock absorbers and other devices designed to eliminate the bumps from rough roads, but thus far, with a few exceptions—and even they are matters of individual opinion—the old car has traveled along in quite the usual way.

The probable effect on business was one of the questions of debate. For that matter, the question probably will be debated as long as business exists, but the governmental attitude toward business in general has lately been made more plain by a tour of Secretary Redfield of the Department of Commerce and Labor through the West. The secretary's remarks boiled down are "Play square."

"New Ideals in Commerce" was his theme on several occasions, and the thought expressed was that the man or corporation which is to be and remain successful must be honest with its customers.

"There are thoughts abroad in the land that have not always been here," he said. "The time in which the getting of profits was the supreme ideal has been succeeded by a time in which the giving of service is thought to be the true ideal. We have seen, for example, the springing into life of commissions which say to our great public service companies, 'Thus far shalt thou go, and no farther'—which tell them plainly that both their existence and their profit depend upon serving well the public from whom they derive their powers; which tell them, indeed, that this ideal of service goes so far that they must take the lean with the fat, and may not make the ideal of profit a controlling factor in every detail of their respective enterprises.

"Few men will deny the ideals of one time form the practice of the next, and that our whole history, whether on the commercial, the material, or the political side, has been the gradual working out into fact of the ideals of the days before. What, then, are the ideals of today in commerce? For of we can find them, we may with reasonable security say that they will form the practice of our successors in commerce.

"There was an old commercial ideal wrought into law, which law still has a measure of respect from its antiquity, though hardly from its respectability. This ideal was centered in the old law Latin phrase, 'Caveat emptor,' which, being interpreted, is 'Let the buyer look out.' Look at this commercial ideal a little, and see how disreputable it has become. Apply it to food, and straightaway rises up the public conscience in the shape of a pure food law, and says, 'Thou shalt not.' Apply it to patent medicines, and brave publications rise up to denounce those who sell what may deceive or injure.

"There is coming into being a new law of fair trade, which begins rather plainly to say that the seller has grave responsibilities, and that it is his business to watch out lest he deceive the buyer. There is a growing conception of honor in such matters; men will carefully buy of houses the names of which they think are trustworthy guarantees of quality.

"Once the representative of a great manufacturer said to me, 'Any goods that bear our firm name are all right.' But he sold lots of goods on which the firm name was not put. There was an ideal half baked, reminding one of the man who said he had his principles, but didn't always carry them with him. There are lines of business now in which it is honorably recognized that the seller must be supremely careful lest he be condemned.

"Among such take, for example, the exceptional care and skill put into the selection of materials for, and the design and the manufacture of a modern automobile.

"When you look at our entire commercial field, it is surprising to see how far the old doctrine of 'Caveat emptor,' however much it may survive in discussions of law, has fallen into the background of our commercial life, and the seller is beginning to recognize that a large part of the responsibility rests with him. A rising and increasingly definite social consciousness says to manufacturers, 'Thou shalt not deceive, whether by name, or by label or appearance or composition or advertisement. We, the buyers, mean that you at the source shall look out for us.'

"See how far this idea will go naturally into definite practice among yourselves tomorrow. Your wife will buy for your table the product of the manufacturer who she believes recognizes the principle that the seller must take care. You yourself will buy your clothing from the tailor who you believe puts the most honor into his work; who, in short, serves you best. You will deal with the physician who puts the most and not the least of himself into his professional work. The lawyer will hold and control the best practice longest who gives the most in value and service for what he gets; and the man, whether he be physician or lawyer, or minister, in professional life, who does not feel that as a seller of his services it is his privilege to give the most he can, will have short shrift among you.

"One great product has standing among us because, being called 'the best,' it is so esteemed to be. The producer has felt the responsibility on the seller. Advantage is taken by sellers ,both rightly and wrongly, of this thought. Men of broad vision, who grasp the truth, put their conscience into their goods, knowing it pays. Men of narrow vision will try to persuade over the bargain counter that they are serving the consumer by giving him a dollar's worth for 50 cents."

Burnt Nose Dreads the Tire.

It is said that a healthy young bull terrier living on the outskirts of Toledo, O., made himself obnoxious to the drivers of Overland cars undergoing road tests by tearing at full speed at every car that passed and apparently trying to bite chunks out of the rear tires. The performance got on the nerves of the men to such an extent that considerable thought was devoted to means for putting a stop to the nuisance.

Finally a driver tried the experiment of applying brakes sharply when the beast's nose was very close to a tire. The result was that the ample snout of the dog was well scorched by friction with the spinning tire before he could get his own brakes working, and the chasing pastime was nipped in the bud. What the story really says is that the beast recognized an Overland chassis thereafter and took to the woods with his burnt nose in his mind's eye, so to speak; but—well, perhaps that's expecting a little too much from a mere dog.

Cars for Chickens—the Cackling Kind.

Many moneyed men are fond of chickens and many moneyed men have been known to buy limousines for them, but John Bowman, who died last week in Stonington, Ill., leaving a fortune of a half a million dollars, probably holds the record in his line; he was rated as the "most eccentric man in Illinois."

He was a bachelor and fond of his chickens—the cackling kind—and as roosting places for them had five costly cars on his farm; whether the hens fancied the cars as residences has not been ascertained, but they used them, nevertheless. Other noteworthy deeds of Bowman were buying a room full of musical instruments and never uncrating them; buying a nursery and never planting it, and setting half his farm aside for nature to take its course thereon. He was 62 years old and, it seems needless to remark, lived alone.

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KEEPING COOLING SYSTEMS FROM GETTING TOO FRIGID

Conditions that Cause Excessive Radiation—Compounds that Can't Congeal and the Ingredients Required to Make Them.

This is the season when one of the hardiest of hardy annuals, one of the good old perennials, blossoms forth—when, in other words, the annual offering of advice is made for the benefit of those who use their cars regardless of the retirement of the mercury in the thermometer tube and who therefore must expose their radiators to the danger of freezing up. Again in other words, now is the time to make a suggestion or two regarding anti-freezing solutions, and perhaps save someone the trouble of hunting up last year's papers to find out what to dope the water with so it won't congeal if it gets frosty.

It may perhaps sound a trifle paradoxical, but it nevertheless is true that the better and more efficient the cooling system the more liable it is to freeze up; the car that stays coolest in hot weather is not unlikely to be the first to freeze up, if it gets a chance, when the weather feels that way. Radiators are made to cast out heat just as fast as possible, and, not having any discretion in the matter, they continue to do so at all times, regardless of the fact that the cooling system may be much too cool.

It is logical and proper, though perhaps unfortunate, that a rapid and efficient cooler will be a rapid and efficient freezer. As long as the motor is running and doing work there is no danger except, perhaps, that of a little over-cooling, which may be remedied by removing the fan belt or, if that be too much, by letting it run slack. But if left standing in ordinary freezing weather the water is sure to congeal in time, and even if the motor is running slowly there is danger if the weather is exceptionally cold, especially if there is a wind blowing directly on the radiator. And motors have been known to stop, for various reasons that are well known, and let things freeze up when the owner was absent and in blissful ignorance of what was happening to his car.

At any rate, an anti-freezing solution can't do any harm, and even if the conditions never happen to be such as to bring about freezing, it is worth something to know that even if the worst should happen the water will remain liquid. Peace of mind is always worth something. Calcium chloride is a familiar substance with which to "dope" the water; the resistance of a calcium chloride solution to freezing depends upon the amount dissolved in the water. Two pounds to a gallon of water will freeze at 18 degrees Fahr.; three pounds to a gallon will freeze just above zero; four pounds to a gallon will freeze at 17 degrees below zero; and five pounds to the gallon at 39 below zero—which is no sort of a temperature for anyone to go automobiling in for pleasure, incidentally. Calcium chloride is made in various grades and the cheaper the quality the more free acid it contains, and the acid sets up electrolytic action between dissimilar metals in the circulating system. Therefore, only the commercially pure stuff should be used, and care should be taken to ask for the right thing.

Glycerin may be and has been used; but it is expensive, it decomposes under heat and sometimes smells unto heaven, and it is sure death to rubber. So it may be counted out, unless nothing better is at hand or unless mixed with alcohol. Denatured alcohol is perhaps the best thing to use, all things considered, for it will not affect either metal or rubber, will not form deposits, as solutions of salts sometimes will, and has no electrotytic effect. A 40 per cent. solution of alcohol—that is, two gallons of alcohol to three of water—will resist a temperature of 25 below zero. Fifteen per cent alcohol in the water will keep it liquid till the mercury marks 11 degrees Fahr.; 20 per cent. will freeze at 5 degrees; 30 per cent. congeals at 9 degrees below zero.

The only trouble with alcohol is that it evaporates, leaving the water behind and so reducing the efficiency and raising the freezing point. The remedy is, of course, to put in more alcohol occasionally, though evaporation may be checked considerably by adding glycerin to the solution. A reasonable quantity will not hurt the rubber or decompose to any extent. It is said that by using a mixture of half glycerin and half alcohol with which to doctor the water there will be a minimum of evaporation and also of deleterious effects. The glycerin will not evaporate, so shrinkage must be made up with water and alcohol. The freezing point of an alcohol-cylcerin-water solution is somewhat higher than that of the alcohol-water mixture—about 11 degrees higher for a 15 per cent solution but only two or three degrees higher for a 40 per cent. solution.

While ice-machine oils have been used as cooling fluids and have given some satisfaction, the trouble is that oil is not nearly as good a conductor of heat as water and therefore is liable to cause overheating unless the system is particularly efficient, and that anything made of rubber is sure to have a short life and a merry one if kept in contact with oil.

ASK $20,000 FOR GASOLENE STANDARD'S DRIVER SPILLED

Peculiar Fatality in Suit in Massachusetts—Fuel Spilled into Basement Explodes When Employe Opens Boiler Door.

What probably is one of the most peculiar accident cases which has occurred in the automobile trade in some time is now in the Superior Court in Northampton, Mass., wherein Timothy C. Leahey, as administrator of the estate of John O'Rourke, asks $20,000 damages from the Standard Oil Co. of New York.

It is alleged that January 27 of this year a Standard Oil wagon went to the Draper Garage, where O'Rourke was employed, and in endeavoring to fill the garage gasolene tank placed the funnel outside the intake pipe, with the result that a large quantity of gasolene ran into the basement and overspread the floor. When the agent discovered the mistake, it is charged that he went into the basement and swept the gasolene with a broom into a covered receptacle in the floor, covering this receptacle after he had cleaned the floor of gasolene.

The fuel remained in this receptacle until March 4, it is claimed, when an overflow of water during the filling of a boiler caused the gasolene to rise from the tank upon the invasion of the water and to again spread itself over the floor. When O'Rourke went into the basement to fire the boiler an explosion occurred as he opened the fire door and he was so severely burned that he died within a few days.

One of the questions brought up by the defense is whether the gasolene could have remained in the receptacle from January 27 to March 4 without evaporating.

Permit Refused; Erects Garage Without It.

There is one way of getting around official red tape, as has been discovered by A. G. Rice, a dealer in Ruby steel garages in Indianapolis; Rice wanted to put up a demonstrating garage on Capitol avenue, but encountered an obstacle when Building Inspector Winterrowd began a discussion of whys and wherefores based upon some ordinance or other which said something about garage walls in the mile fire zone being a foot thick, of stone, brick or concrete. It began to look as if Rice would get his garage permit next spring, but this didn't appeal to him, so he put the garage up without a permit and told the authorities that if they didn't like it they could make him take it down. Thus far the garage is standing.

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MAKING A WOODEN CRUTCH FOR A CRIPPLED REAR AXLE

Wreck on the Rock in the Road Followed by Effective Rural Repair Job—Not Ornamental, But It Brought the Car Home.

It wasn't a ploughed field that the car was staggering through; if it had been one, things might have been better. There were indications that at some time in the past wheels had been over the ground, but the tracks were visible only at intervals. There were rocks and holes, stumps and brushwood and an occasional small tree in the narrow and irregular gash that had been cut through the woods, but nothing that looked like an attempt at a road.

"Well," exclaimed the driver, kicking out the clutch and applying the brake with a suddenness that was not altogether necessary. "How much further are we going through this sort of thing? It's three miles since we saw the last thing that resembled an imitation of a road. What's the use?"

His companion stood up and looked around, and sat down again.

"Looks about the same as far as I can see," he announced. "Wouldn't it make you mad, though, if there was a real road just out of eye-shot, and we turned round here?"

"Shucks! That's the sort of dope you've been handing out all along. What if there wasn't a road ahead within 50 miles? There are two sides to everything, son."

"Son" stood up again, took another look and again sat down.

"Here comes a human being," he said. "We'll ask him."

The Human Being approached leisurely, stopped abreast of the little car, curiosity on his face, and remarked, casually:

"Purty rough goin', ain't it?"

"It's got to be called rough because I don't know a word that means rough multiplied by a hundred," replied "Son," grinning. "Where's the main road?"

"You ain't got to go fur to find it," replied the Human Being, gently, resting his axe-head on the ground and leaning on the haft. "You're on the main road now."

"Wha-a-a-t!" ejaculated the two in the car, in horrified unison.

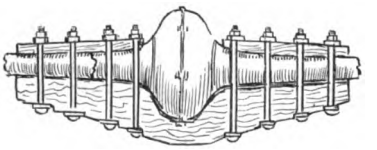
"Anyway, this is all the road there is between here and Stubsborough, which is about three houses an' a store big an' eight miles further on. But if you don't like things a leetle mite rough, which I cal'late you don't, you mightn't like it; it gets a hull lot worse as you go on."

"Back for ours!" said the driver, energetically. "How far is it around to Stubsborough by a—well, a road resembling a real road?"

"Take you raound 'baout 18 mile," said the Human Being. "Guess you'd find it wuth while, though."

"Well, rather!" And the driver snicked in his reverse and commenced the maneuvering necessary to get the car headed the other way. "Much obliged. Give you a ride, if you like, but I guess walkin's faster."

Space in the "road" was scarce and it was much curtailed by big rocks, and bigger ones reared their heads along the margin of the way. The driver backed and filled until he had the machine almost around; another backward sweep and the thing would be done. But alas! for human frailty. He put just a trifle too much energy into the motor for that last reverse. The car overran the distance and the rear axle casing struck the sloping surface of a rock, slid up to the top, slid over the summit, slid down the opposite side, and slid over an abrupt drop of some four or five



EMERGENCY AXLE REPAIR

inches, stopping with a wrenching crash with one wheel clear of the ground and the axle casing propped on the rock.

In anxious silence both men got out and went to the rear end to investigate. And it didn't take much investigating to find that the terrific thump had done real damage. There was a crack in the axle casing close to the differential housing, and it gaped darkly through layers of dust.

"Son" and the driver looked at each other and the Human Being looked at them. Then all three looked at the axle. The Human Being was the first to break the silence.

"Kin you run her that way, boys?" he enquired.

"Run her!" growled "Son." "No, we can't."

"Well, I got a sort of a shop over to my place, an' mebbe I kin help some to git the buggy goin'," he suggested, tentatively.

"Huh!" snorted the driver. "Got a regular repair-shop, and all that?"

"'Taint no automobile repair shop," replied the Human Being, "but I thought likely you might get goin' so's you could get on the smooth road. There ain't no other shop within 30 miles."

He squatted down and looked critically at the fractured axle.

"Any works inside that there pipe?" he inquired.

The two unfortunates saw a glimmer of hope in the attitude of the Human Being, and proceeded without loss of time to elucidate the "works."

"If we could get that there pipe axle stiffened up, you cal'late you might get a ways with it?" he enquired.

They allowed they might, and the Human Being took matters into his own hands from that point on. With a piece of string and a straight stick cut in the woods he made measurements of the axle casing and then invited the boys to his house, a mile down the "road."

"It's purty nigh sundown," he explained, "an' you'll be wantin' somethin' to eat an' a place to sleep, an' we won't have time for nothin' tonight."

The farmer's hospitality was accepted, and on the following day work was commenced. That is, the farmer did most of the work, for, like most agriculturalists who live in comparative isolation, he had a good tool equipment and knew how to use it to good advantage.

A piece of oak plank 2½ inches thick was marked with the contour of the axle casing and the shape cut out so that the plank could be fitted up to the under part of the axle, extending almost from one spring perch to the other. The plank was so cut as to be about three inches deep under the differential casing, and tapered to about 2½ inches deep at the ends. The upper edge was hollowed to lie snugly against the casing. A number of ½-inch bolts and an equal number of short iron plates, each with two holes through which the bolts would pass, were provided. With this material, a saw, a couple of gouges, a small plane, hammer, wrenches, etc., the party went to the scene of the shipwreck early in the afternoon.

The first thing the Human Being did was to fit the truss to the axle more accurately than he had been able to fit it in the shop. This was readily done with the aid of the saw and the plane and chisels. Having been fitted—incidentally, the car was carefully jacked up to permit the work to be done—the truss was bolted, or rather clipped on with the aid of the ½-inch bolts and the iron plates; a one-inch strip of oak on the top of the axle on each side of the housing saved the metal from possible crushing from the plates.

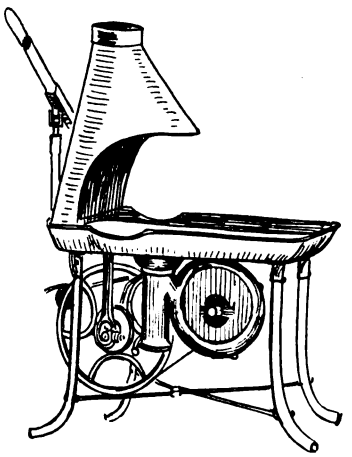
When it was all done it certainly looked like the devil; everyone said so. And it was a matter of worry to the driver how he ever was going to keep that truss clear of the rocks—if the machine would go at all. However, he managed it, and the car "went." It was something more than 30 miles to a real repair shop; and the car went so well with the funny looking rear axle that the trip was continued for a day and a half more until a place was reached where a new axle casing could be put in.

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FORGES THAT FIT INTO GARAGE EQUIPMENT

Variety That Obtains in Portable Blacksmith's Fires and the Advantages of Such Appliances for Garage Use—Why they Must Not be Used Within Doors—Foot Power and Hand Power Blowers Contrasted.

Billy Rea, garage proprietor out-of-the-ordinary, whose exploits have been worthy of recounting for the good and sufficient reason that they were exploits of the real business man bent on building business and holding it, was superintending the unloading of a mysterious-appearing packing case from a dray drawn up in front of his garage. It was a very heavy packing case; one could tell it was heavy by the languid manner in which the driver and his helper approached it; their actions made plain that it would require some little time to get it down and into the garage, and so what



SILVER BELT DRIVE BLOWER

was the use of hurrying anyway? But that did not make Rea any the less impatient; he was like a kid with a new toy.

His new toy, viewed from any kid's angle, however, was a rather peculiar one. It was nothing more or less than a small, portable, but none the less heavy, blacksmith's forge—the latest member of the growing list of equipment that made up his "family" of tools, so to speak. After he had made up his mind that he not only wanted the forge but that he really needed it, he could scarcely wait until he got it.

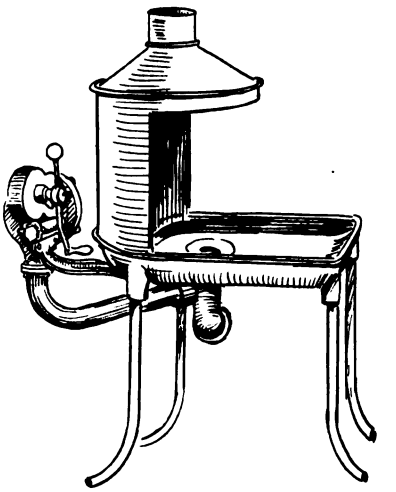
It is true that his garage was not a very large one, but it is equally true that it was the largest garage in the city and consequently it was up to Billy Rea to live up to his reputation for turning out repair work on time—that is what made his garage the largest one in the city. As is the case with many another garage, the times when the need of a forge was felt were not what might be called frequent. Occasionally, one of his patrons would come in off the road with a bent steering knuckle that needed straightening in a hurry or some one else would want some sort of a job done that could not be done without a forge. The blacksmith down street got these jobs; which was all right insofar as it went. But the blacksmith could not always finish the work as quickly as Rea wanted it finished or as quickly as the patron demanded. The solution of the problem, as plain as a pikestaff to any one, required the purchase of a forge of his own. The driver of the dray was unloading it. That's all there is to the story as far as Rea is concerned; he wanted the forge; he bought it; and now he can be certain that work requiring the use of a forge will be finished on time and, incidentally, he saves the blacksmith's charge.

Consider the Forge, How it Blows.

When Rea bought his forge, he bought it from a catalog and he did not have a great deal of trouble picking it out. He had to decide with regard to the size he needed, whether he wanted it with a hood or without one, how the blower was to be operated—he passed up the idea of using compressed air to operate the blower though the shop was fitted with a compressor, and he did not altogether like the idea of operating the blower from his line of shafting, for, he figured, the person using the forge must wait for the metal to heat and during the wait he might as well exercise his muscles blowing the fire—and cost had a little to do with the choice.

In the construction of forges in the concrete, there is considerable variety in detail. Thus, for instance, the draft that makes the coal glow may be induced either by the regulation lever and bellows that helps to give the blacksmith his mighty muscles, or it may be induced by a miniature rotary blower operated by a hand crank. In other styles, the rotary blower may be operated by foot pressure, or by an electric motor or by belting from the power shaft in the shop, if it has one; and in some styles, air that is compressed for other purposes is used to blow the fire by the simple expedient of piping it beneath the fire box. In other details of construction, however, there is not a great deal of variety—fire boxes are much the same in shape and material, supports vary slightly, but not greatly, and the method of confining the fire where it will do the most good and the least harm to combustible property varies somewhat.

It is obvious, of course, that no such appliance should ever be placed within a garage, for even if the owner were able to overcome his own scruples with regard to the fire risk it is extremely doubtful if



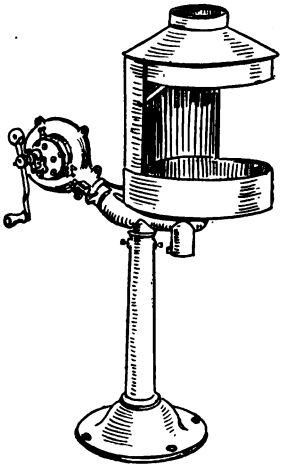
CHAMPION MACHINIST'S FORGE

any fire underwriter's inspector would pass the installation, particularly when the requirements covering smoking in garages are so rigidly enforced. There is nothing specific in the rules and regulations of the fire department which prohibit the use of a forge in a garage, though the idea is frowned upon by the Fire Underwriters' Laboratory, which is authority for the statement that one would not be permitted. But there are very few garages where there are not a few feet of open space at the back where a forge could be installed under a light roof to protect it from the elements. The better way to do, of course, is to house the forge in a small metal shelter which could be erected very cheaply and where there could be no possibility of its starting a fire anywhere else except in its own fire box. Incidentally, a great

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many small forges are so light that two men would have little difficulty in lifting them out into the open temporarily. This, in fact, is one of the principal advantages of the small portable forge.

But to get back to the forges themselves. Though much of the poetry that has served



ROYAL GARAGE FORGE

as a halo for the burly smithy was written about his wheezing bellows, that contrivance practically has passed out of existence and given away to the very much smaller and very much more efficient rotary blower; very few modern forges are fitted with bellows. They are more or less unmechanical and occupy more space than a modern forge—hood, blower and all—which counts for a great deal in a garage.

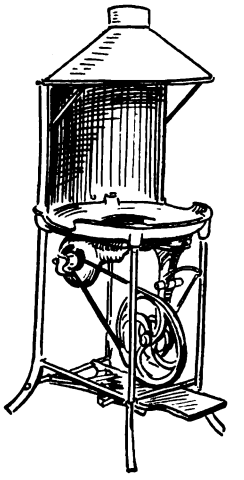
Not Too Little to do Big Work.

In all of the forges produced by the Silver Mfg. Co., of Salem, O., and the line is quite an extensive one, ranging from the tiny forge suitable for the occasional use of a farmer to the full-sized implement suitable for an exceedingly busy iron worker's shop, a small rotary blower is used and in every case the blower is operated by means of a long hand lever; but so that the lever will work easily, it is swivel mounted and follows the movement of the operator's hand.

The type that is illustrated herewith is mounted on four substantial iron pipe legs firmly braced and attached in such a way that they can be easily removed on occasion. The blower is mounted directly beneath the fireplace, to which it is connected by means of the short, wide pipe shown in the picture. The blower is connected to the lever through the intermediary of a belt running over a large wheel which provides the necessary gearing to operate the blower at comparatively high speed. One distinctive feature of the design is that the fireplace is separated from the hearth, construction which mitigates the danger of breakage from the expansion and contraction of the parts. It is pointed out that the forge will heat iron three inches in diameter to welding temperature. The height of the forge from the floor is 30 inches; the hearth measures 24 x 35½ inches; the fan is 12 inches in diameter, and the weight of the forge complete with the hood shown is 210 pounds.

Blowing Fire with a Whirlwind.

The construction of the Champion forge, which is illustrated herewith and which is produced by the Champion Blower & Forge



BUFFALO FOOT POWER FORGE

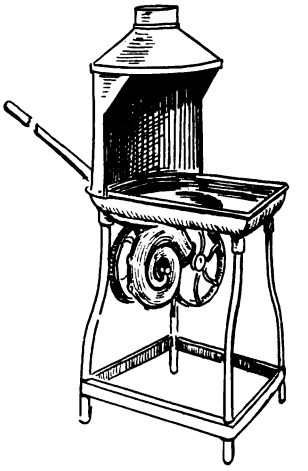
Co. of Lancaster, Pa., as only one unit of an extensive line embracing forges of all kinds and descriptions, to say nothing of numerous separate blowers and other iron working tools and appliances, is so simple that it scarcely requires description. In this case, too, the draft is induced by a rotary blower which is driven through a specially developed type of worm gearing which makes for easy operation and high speed. The forge is otherwise distinctive by reason of the fact that it incorporates a special type of heavy nest Tuyere iron which produces a rotary, whirlwind blast which is claimed to heat iron one-third quicker than the usual type of iron, for the reason that it does not blow the air directly through the fire and force a good part of the heat up the chimney. The forge is a handy size for garage use and possesses the advantage that it is extremely simple. The hearth measures 23 x 35 inches; the fan is 10 inches in diameter and the weight of the forge complete is 200 pounds.

The B. F. Sturtevant Co., of Hyde Park, Mass., is another concern that makes forges and blowers in considerable variety, the type that is illustrated being somewhat like the Silver forge in general appearance, though there is an important difference in the manner of operation. Instead of being operated by belt, the Sturtevant forge is operated by gearing, the picture making plain the method of application. The long hand lever is swivelled and the rotary blower is carried directly beneath the fireplace, making possible the use of the shortest connecting pipes. The forge is portable in every sense, and as it weighs but 157 pounds, two men should have no great difficulty in moving it from place to place about a garage, or out of the garage into the "back yard" for use. In the type illustrated the size of the pan is 22 x 33 inches and its height is 32½ inches.

Among a number of other sizes and types of forges, the Sturtevant company produces a miniature one for bench use that is designed to use charcoal, though coal can be used with it on occasion. It has a pan measuring 15 inches in diameter, is but 15 inches in height and weighs 42 pounds complete. Obviously it would be a simple matter to move a forge of this size out of the garage during the time necessary to complete the work in hand.

Special Forge for Garage Work.

Although almost any small forge is suitable for garage use, there are compara-



STURTEVANT LEVER FORGE

tively few manufacturers who have gone to the length of developing one especially for that purpose. The Canedy-Otto Mfg. Co., of Chicago Heights, Ill., is one of them and the appearance of the forge itself, as shown by the accompanying picture, makes plain that simplicity, ruggedness of construction and compactness entered largely into its specifications.

The column and base are hollow and are iron castings, lightness and strength following as a matter of course; the forge.

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though quite a large one, weighs but 100 pounds, in fact. The piping that leads from the rotary blower serves also as a support for the hearth and the hood. The blower itself is operated through gearing by means of the crank, which may be turned in either direction; the diameter of the fan is 10 inches. The height of the hearth is 30 inches and its diameter is 18 inches, thus providing ample room for the comparatively small work that the average automobile repair shop is called upon to do. As shown by the picture, the forge has but half a hood, though the full hood can be supplied if required. The temperature obtainable is calculated as sufficient to heat 3½-inch iron to welding heat.

The Buffalo forge which is manufactured by the Buffalo Forge Co. of Buffalo, N. Y., differs from any of the others in that the blower is operated by a treadle, thus leaving both the operator's hands free for the work in the fire. From the treadle wheel the drive to the blower is by belt. In other respects, the Buffalo forge does not differ greatly from any of the others, the rotary blower being mounted beneath the fireplace, where it is in the most convenient place for inducing a draft through the fire. The supports are substantial and well braced and the weight of the apparatus complete is 130 pounds. The diameter of the fan is nine inches and of the hearth 25 inches.

Good Reason for Cleaning Motor.

While the man who has a chauffeur to drive his car does not have to think much about such things, the owner-driver has an incentive to keep his engine clean that is of more importance than the mere desire to see things clean. For instance, he is decently dressed and taking a party of friends for a spin, and on cranking the motor after a stop finds it balky. Reaching down to the carburetter in the dark and feeling for the tickler or perhaps for the needle valve, he finds his fingers covered with oil and dirt —or maybe his gloves. Anyway, he has to wipe his hands on something, and at best they are mussed up—which is awkward and unpleasant in case circumstances are such that he wants to look clean. Or it may be that a good pair of gloves is made to look disreputable. Anything of this sort can be avoided by an occasional washing off of the motor with gasolene, and it does not require much labor to keep a motor quite clean.

Canadian Company "Goes Into" Parts.

The National Forging Co., of Chatham, Ont., capitalized at $100,000, is about to acquire what was the plant of the Swift Motor Car Co. It will be utilized for the production of automobile and carriage forgings.

ELECTRIC VEHICLE COSTS COMPILED BY ASSOCIATION

Committee of E. V. A. on Operating Costs Undertakes to Answer Pertinent Questions — Data Averaged from Many Installations.

"How much does it cost to operate an electric commercial vehicle? How much must be written off for depreciation? How much charged up for fire and liability insurance?" All of these questions are vital not only to the owner of a truck or to the prospective owner but to the dealer as well, for upon him the work of propounding them often falls. It is safe to assume that 99 of every 100 prospective users of commercial vehicles want these questions answered first—before they will consider the mechanical perfections of a vehicle or its capabilities or possibilities. Yet they are exceptionally difficult questions to answer. Up to comparatively recently it has been practically impossible for any one to answer them with any degree of accuracy. Now, however, the Electric Vehicle Association of America has stepped into the breach and its committee on operating records has compiled an unusually complete table of data that covers operating costs in a more than ordinarily thorough manner.

Realizing the necessity for accurate data of the kind, the committee that had the work in hand, and that is composed of Wm. P. Kennedy, E. W. Curtis, Jr., H. F. Thompson, S. C. Harris, E. F. Phillips, W. L. Case and C. A. White, delved deeply into the matter and the fruits of their researches are given in the accompanying table. Obviously, the operation of any motor truck must include so very many variables, of which the varying cost of current is only one example, that the figures in the table cannot be used as a standard for any one particular locality or truck. They are, in fact, only a fair average of operation costs and are based on a large range of electric vehicle installations.

Fined for Speeding; Now Seeks Redress.

Ever since John F. Younglove was arrested July 4 in Sioux City, Ia., and fined $25 for exceeding the speed limit with his automobile he has been chafing under what he terms an injustice and has been seeking to discover some way of getting his money back.

He was traveling on Riverside drive on the evening in question when a car owned by the Wyckoff-Cord Automobile Co. and being used by the police department crashed into the rear of his car and damaged it badly. Younglove couldn't see why he should be arrested when he was run into from behind, but he had to pay the $25 which the judge assessed. He even appealed the case, but lost out.

Now he has instituted a suit against the Wyckoff-Cord company for the damage done to his car. He bases his suit on the claim that the company which owned the car is liable.

Taximeter Company Loses, but Wins.

Although the Court of Appeals of the State of New York this week refused to hold up New York City's new taxicab ordinance while the American Taximeter Co. built new meters to conform to the new rates, the taximeter company is not worrying; the ordinance was held up by the taxicab companies pending an appeal, and although the courts refused similar relief to the taximeter company, the latter got its relief under the taxicab injunction. It appealed, however, as a matter of form. The taxicab companies' case is about to be decided by the Appellate Division of the New York Supreme Court.

AVERAGE OPERATING COSTS OF ELECTRIC COMMERCIAL VEHICLES

BASED UPON FIGURES WHICH ARE AS NEARLY REPRESENTATIVE AS THE VARYING EQUIPMENTS ON THE MARKET AT PRESENT

	700 lb		1,000 lb.		2,000 lb.		3,000 lb.		4,000 lb.		7,000 lb.		10,000 lb.	
Capacity														
Approximate price	$1,500		$2,200		$2,600		$3,000		$3,400		$4,000		$4,500	
Fixed Charges														
Interest @ 6%	$90		$132		$156		$180		$204		$240		$270	
Depreciation @ 10%	150		220		260		300		340		400		450	
Fire insurance @ 1%	15		24		26		30		34		40		45	
Liab. insurance	100		100		100		100		100		100		100	
		$355		$474		$542		$610		$678		$780		$865
Maintenance														
Battery upkeep	$170		$180		$200		$240		$285		$365		$415	
Tire upkeep	130		150		180		230		280		400		600	
Mech. parts upkeep	50		60		80		90		100		125		150	
		350		390		460		560		665		890		1,165
Garaging														
Electric power	$120		$140		$170		$240		$300		$360		$400	
Storage & washing	180		180		180		180		180		180		180	
Garage labor	100		120		160		180		200		250		300	
		400		440		510		600		680		790		880
Annual operating cost		$1,105		$1,304		$1,512		$1,770		$2,023		$2,460		$2,910
Daily cost (312 days)		$3.54		$4.18		$4.84		$5.67		$6.48		$7.88		$9.32
Drivers per day		2.00		2.00		2.50		2.50		2.50		3.00		3.00
Total daily cost		$5.54		$6.18		$7.34		$8.17		$8.98		$10.88		$12.32

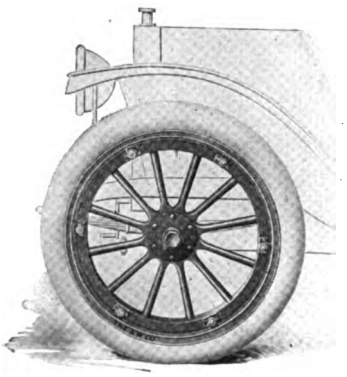
Edison Battery Equipment will have lower maintenance and higher power consumption than above.
Depreciation @ 10% should provide one complete equipment renewal in ten years, which is not figured in maintenance as above.
Interest should strictly be at 3% as depreciation fund gradually reduces investment.

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STANWELD MAKERS DEVELOP A BRAND NEW TYPE OF RIM

Radical Construction Which Permits Removal of Tube Without Disturbing Side Flanges—Employs Collapsible Inner Band.

By way of obtaining construction which will permit of the inner tubes of tires being removed or inspected without the necessity for removing the side flanges, as is necessary with the usual type of demountable quick-detachable rims, the Standard Welding Co., of Cleveland, O., just has added to its Stanweld line a new type of rim, which, while combining many of the excellent features of others of its extensive line of rims, is absolutely radical in construction and is like nothing else of its

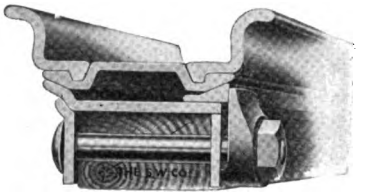


STANWELD "60" RIM COMPLETE

kind. The new rim is designated by the series number 60 and is furnished with two styles of side flanges, one for regulation clincher or Q. D. tires and the other for straight-side tires; both types of flanges fit the same base.

The principal point of difference between the new rim and its predecessors is that the side flanges and the locking wedge ring are continuous and the inner band is split transversely. The obvious advantage of the construction is that it permits the inner band to be removed without the necessity for disturbing the side flanges, which may be more or less firmly rusted in place. Incidentally, it permits of a quick change of inner tubes being made without removing any part of the casing, though at the same time the casing can be removed, if necessary, without taking either side ring from the tire.

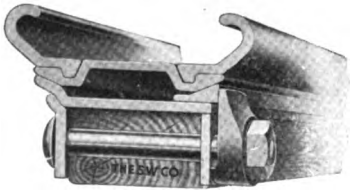
To describe the new No. 60 rim—its full title is "Number-Sixty Stanweld Collapsible Demountable Rim"—in a mechanical way, it consists of five principal parts—the felloe band, which is shrunk permanently on the wheel; the collapsible inner band, which is grooved to hold the endless side rings or flanges; the wedge ring, which centers and holds the inner band on the wheel at its front circumference; and the demounting mechanism, which consists of six clamps operating on bolts that extend through the wooden felloe, and support the felloe band at the rear.



STRAIGHT-SIDE TYPE SECTION

The felloe band is perfectly flat, with the exception of the rear flange, which is beveled at an angle of 25 degrees to expand the inner band when it is tightened on the wheel. The collapsible inner band is grooved at both sides of the top to hold the legs of the side flanges. Its center rises from the grooves to a height equal to the level of the base of the flanges and thus provides a perfectly flat and smooth seat for the tire.

The collapsible inner band is split near the valve stem hole and each end is provided with a portion of a toggle lock that is as efficient as it is unusual. The toggle lock is opened with an ordinary screwdriver and locked by pressure of the foot. Owing to the construction, the greater the breaking strain on the ends of the inner band, the tighter the lock becomes. The side flanges, which it already has been made plain are supplied for either clincher or straight-side tires and fit the same base, are made from flat strips of heavy, cold-rolled steel and, though lighter than the



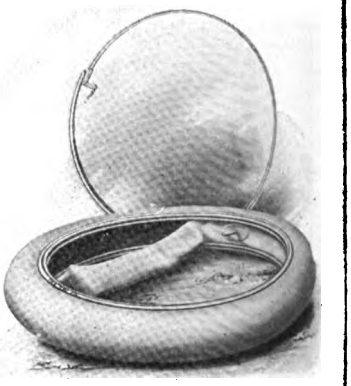
Q. D. TYPE RIM IN SECTION

usual side rings, have greater strength; the flanges are rolled with lugs to fit the grooves in the rim base.

The wedge ring is exceptionally strong in design and construction and its width and thickness present an effectual bar to its bending or breaking. By way of providing against the possibility of creeping and loosening, the wedge ring is beveled only on the upper surface, the angle being 25 degrees; the construction eliminates the possibility of lateral movement resulting from radial strains, as the flat base of the wedge ring increases its resistance to squeezing pressures and delivers all strains to the bolts in a horizontal line.

The clamping devices used on the No. 60 rim are the same as those used on the No. 45 Stanweld rim, and the clamps are automatic in action. By applying a brace or a wrench, the clamps are lifted away from the wedge ring, at the same time swinging free from the locked position to permit the removal of the rim base. Two or three turns of each nut are all that are required to free the rim for demounting.

Though the new Stanweld rim is only slightly heavier than the ordinary type of clincher rim, its strength is considerably greater and it is claimed to be stronger than many types of demountable rims which exceed it in weight. Recent tests



INNER BAND REMOVED

demonstrated that pressures up to 300 pounds had no effect in bending, flattening or displacing its parts. Manufacturing facilities have been perfected for the production of the new rims in considerable quantities for the present market.

Automobiles with "Regular" Names.

A certain manufacturing concern that makes constant use of a number of cars for testing out the apparatus which it makes has hit upon a novel scheme for designating the cars. Instead of using numbers, which are more or less difficult to remember in connection with particular cars, or model designations, which in this case would be cumbersome and unsatisfactory because the cars all are of the same make, each machine is given a name, for all the world as if it was an animal. This apparatus will be mounted on "Billy," and that one will be tested on "Jack," and so on; and even the official reports are made out using names. The idea works out very well indeed and is said to have numbering systems and the like beaten to a frazzle.

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HOLDING THE MIRROR UP TO THE CYCLECAR

(Continued from page 15.)

mistic on the subject. However, the cyclecar has afforded questionable promoters a new excuse to organize manufacturing companies to build cyclecars at ridiculously low figures. Automobile engineers should discuss the cyclecar frankly and fearlessly in order that the public will know its limitations with respect to performances, usefulness and price. Enthusiasm for the cyclecar should be limited to that which is supported only by fact."

Hendee Gives Hybrid Cold Shoulder.

Suggesting that it answered one of the questions propounded by McMurtry, R. G. Betts read a letter of George M. Hendee, president of the Hendee Mfg. Co., which makes Indian motorcycles, and is the largest maker of motorcycles in the world, in which Hendee stated that although the subject of cyclecars first had been considered in 1908, and twice since that time, his company had decided to have nothing to do with it. Hendee considers that in its present form the cyclecar is not suited for American roads, and to build it differently would mean the making of a full-fledged automobile in miniature, which, in turn, would mean "throwing down the gauntlet to the most famous light car in the world" and to other terrific competition which the cyclecar could not withstand.

There was much talk of the cyclecar being the connecting link between the automobile and the motorcycle, but Betts pointed out that since the early days of the industry there have been a succession of such so-called connecting links, none of which have endured. The Orient quadricycle, the Orient buckboard, the Pierce motorette, the high-wheeled motor buggy, the original Hupmobile and finally the Brush runabout at $350, each of which possessed cyclecar characteristics and most of them, the Brush particularly, had been designed for the man of small means, and yet none of them remain, despite the fact that some of them gave good service in actual use. The advertising of the Brush, he said, had simply swamped the makers with inquiries, but after two years' strenuous effort and great expense, only about 4,000 cars were sold.

Narrow Tread the Stumbling Block.

Betts stated that in his opinion the tread represents the crux of the whole situation and added that he does not believe that any narrow-tread four-wheeled vehicle which has to be steered to balanced between ruts, or to run with one wheel in a rut, can prove comfortable or ever will prove practical outside of paved cities. He asserted that the narrow-gauge cyclecar is not likely to prove more popular than has the narrow-gauge railway.

Betts further asserted that the cyclecar movement was largely the work of press agentry, and volunteered to give the name and address of a press agent who has issued a circular letter offering to compile a "cyclecar edition" for any publication that desires it.

In discussing the cyclecar from more of an engineering point of view than any of the other speakers, Joseph A. Anglada, a consulting engineer of repute and chairman of the Metropolitan Section, and who has designed a cyclecar for his own use, pointed out that at the last meeting of the International Federation of Motorcycle Clubs, held in December, 1912, it was decided to classify cyclecars according to size; the larger size, he added, include vehicles weighing not more than 784 pounds, having engines in which the piston displacement does not exceed 1,100 cubic centimeters and fitted with tires measuring 2⅜ inches in section; the smaller classification includes vehicles weighing between 330 and 660 pounds, with engines having not more than 750 cubic centimeters piston displacement and fitted with tires measuring 2 3/16 inches in section. All must have a clutch and change gear.

Specifications Prove of Small Value.

In McMurtry's remarks, however, it was made plain that, practically without exception, no American maker of cyclecars has given any intimation of being governed by any of these specifications; that all of them have, in fact, evolved miniature automobiles rather than cyclecars. That this is as it should be, that the cyclecar should be almost literally "an automobile viewed through the large end of a telescope," was the opinion of practically all of those present, the majority favoring construction featuring a four-cylinder water-cooled motor transmitting power through a two-, three- or four-speed gearset, propeller shaft and bevel drive incorporating a regulation differential.

Anglada pointed out that the conventional low-priced automobile of today contains approximately 1,000 detailed parts, not including such things as nuts, bolts, etc., or items of equipment. He believes that this number can be considerably reduced, and that with the simplification of design and the "establishment of new conventions in designs and specifications (considering that the present $500 machine represents present day conventions), will make possible the economical manufacture and sale of small cars in accordance with the new conventions, and these small cars will probably be known as cyclecars.

"The present conventional design of a low-priced American automobile," he added, "comprises a pressed-steel frame, a four- or six-cylinder motor, a friction clutch of the cone, disk or band type, a sliding gear transmission giving two, three or four forward speeds, bevel gear or worm driven rear axle, semi-elliptic front springs, I-beam front axle, three-quarter elliptic, platform or transverse rear spring. The selling price of cars designed along these conventional lines is somewhere in the neighborhood of $1 per pound for a touring car and as low as 50 cents per pound for the later type of small runabouts.

Price and Cost Must be Considered.

"The total weight of the small car and the cyclecar can readily be brought within the European cyclecar definition, although undoubtedly the simpler design of the cyclecar will result in less weight. Assuming, however, equal weight in the initial purchase of materials, there is an important difference in the manufacturing cost of the two cars. The number of patterns is reduced. The number of dies, jigs, special tools, etc., with their attendant cost, is reduced, and with the smaller number of parts in the cyclecar these parts will be simpler and more rugged in construction, with the resulting increase in bearing surface and a corresponding reduction in the cost of maintenance.

"It is quite apparent that a reduction in the number of detail parts of dissimilar design has a direct bearing on the economy of the manufacturing department. In the first place, it lessens the expense of handling different materials and parts and the clerical work attendant upon their receipt and inspection. In the purchase of fewer varieties of raw material and its transit through the various processes of assembling the simpler cyclecar is also less expensive than is the conventional small car, and likewise the expenditures for final testing, locating of faults and adjustments are obviously reduced. Furthermore, simplification of design is of vital importance to the owner. It lessens the amount of attention required to keep the car in first class running condition and lessens the number of replacements.

How the $500 Car Asserted Itself.

"A few years ago when a car to be sold for $500 was first talked about, it was impossible to build a good car to sell at this price, because manufacturers of parts such as axles, transmissions and engines were not prepared to furnish parts suitable for these small cars. Since that time, however, manufacturers have begun to realize that

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there is a demand for a small car selling in the neighborhood of $500, and some of them are now prepared to furnish from stock the important units entering into the construction of such a car, and for this reason we may reasonably expect that the number of runabouts selling for about $500 will increase."

Anglada added that at present there are no fewer than 38 manufacturers of cyclecars listed, but prophesied that "fully 90 per cent. of them will not be in existence two years hence."

The question of initial cost was another topic that received no small amount of discussion, and though the opinion prevailed that a cyclecar to be successful must be properly designed and constructed of good material and sold for something under $500 withal, no one was able to suggest any logical solution of this palpable problem. To produce a cyclecar, or rather a veritable miniature automobile, to sell for $500 or $600, it was pointed out, is not particularly difficult, though it would entail production in considerable quantities.

Quality an Essential, Says Merkel.

J. F. Merkel, who designed the motorcycle bearing his name, was not present, but in a communication he expressed the belief that there is room for a good cyclecar and that he expected eventually to see such a vehicle in considerable quantities on the roads, though he did not expect that its appearance would have any effect on either the motorcycle or the automobile trade. "But," he added, "quality is essential; quality must be put into a cyclecar to sell for something between $500 and $600; it must be a four-wheel, narrow tread vehicle seating two passengers side by side and carrying a four-cylinder motor of the water-cooled type."

In discussing the initial cost, M. Machol opined that first cost really appeared to be of small moment provided the cost of upkeep was less than that for a small, light automobile; that it was low upkeep cost that first prompted the birth of the cyclecar and that provided a cyclecar could be produced to sell for something between $500 and $600 there should be a market for it if it could be run cheaply. Both Twombly and J. R. Cantley, the latter having had considerable experience with light cars abroad, concurred with Machol in this respect, Twombly pointing out that it was the promise of low upkeep cost that really prompted the development of the cyclecar on the other side of the Atlantic. Others, however, were not inclined to the belief that the purchasing public could be induced to buy a car that is manifestly less than an automobile for more money than will purchase a "certain runabout made in Detroit and selling for $500" merely on the promise of lowered upkeep costs.

Continuing, Twombly switched to the question of vehicle efficiency and very strongly advocated that American designers pay greater attention to the reduction of head resistance as a means to the reduction of upkeep costs by increasing engine efficiency. Abroad, he pointed out, a great deal more attention is paid to the possibilities of the stream-line body than is the case in America, and as a result no small amount of the success attributed to the light car can be traced almost directly to this feature. In the course of his remarks, Cautley made an earnest plea for more efficient motors instead of merely large ones.

Spring Suspension Important Feature.

As was to be expected in the discussion of a narrow tread vehicle which must of necessity seek other paths than those travelled by larger cars—and undoubtedly other bumps—spring suspension formed an important part of the discussion, the majority of those holding, with a great deal of truth, that with the small, light car the springs play a far more important part than they do with larger and heavier cars, and that as a consequence they are susceptible of, or, rather, require, proportionately greater attention. Twombley gave as his opinion that no kind of spring was superior to the long cantilever, which type, he explained, gave the necessary resiliency and a slow period of oscillation without undue rebound. He found that a 36-inch cantilever, with the bearing directly at the center, gave the best all-around results.

The belt drive, attacked by McMurtry with not very great vehemence, was passed over less lightly by P. J. Bailey, of the Consolidated Mfg. Co., of Toledo, O., who, though not present, expressed his opinions in a written communication. He drew attention to the fallacy of expecting good results to follow the elimination of the differential by expecting its place to be taken by slippage in one of the belts. If the belt were loose enough to slip an amount appreciable enough to permit the elimination of the differential, he pointed out, it probably would not be tight enough to drive the vehicle up hill or over heavy roads. "The V-section belt either won't slip at all," he summed it up, "or it will slip too much; the differential cannot be eliminated."

Bailey Declares Cyclecar a Fad.

Bailey is not at all in favor of the cyclecar, which, he said, is nothing more than a passing fad; it has not been the success abroad that generally is believed, and it cannot exist in America because the roads prohibit its use. Those who ride in automobiles, he added, look down on the cyclecar because of its size and motorcyclists hold it in contempt because they can "trim" it on the road. The majority of those who ride want a "real automobile"; and if they cannot afford it they buy a "real motorcycle." One other point Bailey made that was not made by any of the others, was that those who ride in cyclecars are so low that they are in an excellent position to receive the dust and dirt thrown up by both motorcycles and larger automobiles.

A. B. Brown, who was called on by the chairman, stated that he had had no experience with the cyclecar, but he did not see how it could be regarded as an exactly luxurious vehicle. While it might prove of some service in cities, he believed that its narrow tread absolutely prohibited its use in any but the large cities of the country. In fact, he considered it unfair to ask that it be used for touring purposes.

Those Who Believe in the Newcomer.

Chairman Anglada stated that a number of other motorcycle and cyclecar manufacturers had been invited to express their views, but comparatively few of them had accepted the invitation. In addition to Merkel and Bailey, only the American Motor Co., of Brockton, Mass., had replied, the latter indicating that it was preparing to engage in the manufacture of a cyclecar, or miniature automobile. W. S. Frazier & Co., of Aurora, Ill., who were described as motorcycle manufacturers but who are not identified with the industry, also expressed faith in a vehicle of the cyclecar type. Of the cyclecar manufacturers, only the American Cyclecar Co., of Bridgeport, Conn., voiced its views. They were conveyed in a paper prepared by Harry J. Stoops, general manager of the company, whose statements left no doubt of his confidence in the future of the little vehicle, which he firmly believes is a necessary connecting link between the automobile and the motorcycle.

Toward the close of the meeting a resolution was offered defining, at least tentatively, the American idea of a cyclecar, or rather the ideal specifications for such a vehicle. It was explained that the resolution was merely in the nature of what might be termed a straw vote, but it was very vigorously opposed, particularly by the newspaper men present, and finally was withdrawn. Those who opposed it believed that, however tentative, publication of such specifications would be misconstrued or misapplied and cause all manner of trouble. In expressing this belief, David Beecroft also voiced his opinion that, although the cyclecar might not be suitable for touring purposes, there are so many millions of people in cities that they comprised a large and promising market in themselves.

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CADILLAC AGAIN AWARDED DEWAR RELIABILITY TROPHY

Coveted Prize Awarded American Car for Second Time in Five Years—Strenuous Tests by R. A. C. That Determined Winner.

Bearing the distinction of being the only make of car in the world to duplicate the achievement, the Cadillac car has again been awarded the Sir Thomas Dewar trophy by the Royal Automobile Club of Great Britain for all around vehicle efficiency and reliability demonstrated in a series of exhaustive tests made under the supervision of that body. It was five years ago that the Cadillac first won the trophy as the direct result of the degree of standardization of its parts. A stock car was dismantled and duplicates for 89 of its parts, selected from stock, used in rebuilding it; only screwdrivers and wrenches were permitted in the rebuilding.

The test just completed, whereby the Cadillac is awarded the trophy for the second time, involved driving over 1,000 miles of give-and-take roads; a careful compilation of fuel and oil used—the fuel consumption figured out at 17.17 miles to the gallon and the oil at less than one pint per 1,000 miles; tabulation of the number of times the electric starter and the electric rear axle gear change was used; the time the lamps were burning, etc. During the test, the speed was maintained practically constant at 19.5 miles an hour. The starter was used 130 times and at the conclusion of the test cranked the engine 1,000 times without falter. All the lamps were continuously lighted for 66 hours 17 minutes, though at the end of the trial the side, rear and speedometer lights continued to burn for 20 hours longer. The two-speed rear axle mechanism was operated 520 times without fail.

Pickens Denied Reinstatement by A. A. A.

William H.—who is "Bill"—Pickens, is still feeling the effects of that race between "Jack" Johnson and Barney Oldfield, which was held on the Sheepshead Bay race track in October, 1910, and he is likely to feel them for some time to come—until January 1st, 1917, to be exact. Pickens, who was Oldfield's manager at the time, was disqualified by the Contest Board of the American Automobile Association for an indefinite period for promoting the meet without the A. A. A. sanction. Subsequently, the disqualification was made for a definite period to expire in January, three years hence. At the last meeting of the Contest Board, Pickens's formal application for reinstatement to good standing was considered, but was denied in the absence of any satisfactory reason for warranting favorable action. At the same time, George J. Greenberg, participant in the Chicago Automobile Club vs. Chicago Athletic Club run on June 12th and 13th, was disqualified and suspended until January 1st, 1915, for "wilful and deliberate violation of the special rules governing the run."

Cuts Tire; Now Proposes Ordinance.

Alderman Churchill of Milwaukee is "sore" on the Milwaukee Electric Railway & Light Co. to the extent of $21, and he has vented his displeasure by backing up a proposed ordinance which would compel the street car company to smooth off all the feather-edge rails, frogs and switches in its system. He claims one of these rails cut into a perfectly good automobile tire and "set him back" $21.

The street car company says it doesn't need any ordinance and that if anyone knows where there are such rails the company will repair them immediately upon notification. Eight months ago the alderman introduced an ordinance along these lines, but it never was reported upon by Commissioner of Public Works Simmons, to whom it was referred. The latter said it was too indefinitely worded and would cause all sorts of trouble in its interpretation and enforcement.

Percy Lambert Killed in Practice.

In the midst of an eventful automobile racing career that had brought him many world's records, Percy Lambert, the British driver who in February last succeeded in driving 103 miles in an hour, was killed on Brooklands track in England on Friday, 31st ult. At the time of the accident that resulted in Lambert's death, he was attempting to travel further in an hour than Chassagne with his 12-cylinder Sunbeam travelled on October 8th; Chassagne made nearly 108 miles an hour. While moving at the rate of 114 miles an hour, one of the tires on Lambert's car collapsed, precipitating the car over the embankment and on top of the driver. He was killed instantly.

Chauffeurs Denied Retrials for "Murder."

New trials have been denied to Frank Hrodek and Laurence Lindbloom, chauffeurs, who were recently convicted in Chicago of murder in running down and killing pedestrians with the cars they were driving; testimony in both cases showed that the chauffeurs had been drinking and were driving recklessly at the time the accidents occurred. Hrodek killed Patrick J. Condon, a retired merchant, and Lindbloom killed Joseph Weiss, a cigar manufacturer. Both men were given long terms in prison.

BOTTA, LOCAL PILOT, WINS BIRMINGHAM OUTLAW RACE

Three of Seven Finish Unsanctioned 100-Mile Event—Two Accidents, One of Which Likely Will Result in Fatality.

For the second time this year, and the third time within two years, C. I. Dunivan, who is apostrophized by the Contest Board of the American Automobile Association as the most persistent promoter of unsanctioned racemeets, has figured in a track racemeet that in all probability will prove fatal for one of the contestants. Dunivan's latest appearance as a promoter was made at Birmingham, Ala., on Wednesday, 29th ult., and as was the case with his previous recemeets, the meet was not sanctioned by the A. A. A. Dunivan himself did not drive. He intended to do so, but as the meet, which consisted of a single 100-mile race, had been advertised as an amateur event, the judges forbid the promoter starting. None of the drivers who took part are known outside of their home circles, the race going to R. F. Botta at the wheel of a "Lyons special"; H. F. Chaflin, in a Buick, was second and Barr, with a Studebaker, was third. Botta's time was 1:58:16. Only three finished of the seven that started.

It became evident almost from the first that accidents would be the order of the day, for in the 11th lap W. R. Lawson, at the wheel of a Studebaker "20," crashed through the fence, sustaining a sprained leg and severe bruisess; his mechanician, Percy Kaplan, escaped with bruises, though he was rendered unconscious. The most serious accident of the day, and the one it is thought likely will result fatally, occurred shortly after Frank Katz, who with a Studebaker had been leading the field, stopped to replenish fuel in the 73rd mile. In the thick dust on the grandstand turn, Katz swept through the fence and the car overturned, injuring the driver severely. Fortunately, Katz had no mechanician in the car with him.

Botta won the race easily, for after leading the field up to the 40th mile, when he relinquished the lead to Katz, he regained it in the 53rd mile and never was headed. Of the seven that started, L. S. Crane, who drove a Pope-Hartford, was forced out in the 80th mile when his car caught fire; engine trouble put out Wm. Odell (National) in the 29th mile; Katz went out in the 74th mile, and Lawson retired in the 11th mile. Chaflin, who was second, covered the distance in 2:09:35 and Barr, who was third, finished in 2:10.

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MOTOR TRUCK MAKES MONEY IN COUNTRY MILL SERVICE

Cheaper Than Horses, Despite Hills and Bad Roads—Modern Appendages Help Make Old-Fashioned Business Profitable.

Some 50 or 60 miles north of New York City there is a little village in the hills that is so small no one seems to know just what its population is. It is altogether probable that if one were to get persistently inquisitive as to the number of souls within its borders the person questioned would hold up one hand to tick off the population on his fingers and commence:

"Well, let's see! There's Charley Ketcham, who keeps the store near the station, and his five daughters and two sons; Rob Doxey and his wife and two girls and a boy over at Glenbrook farm; there's Dan Secor, and his wife and three daughters, and generally they have a lot of boarders, but they only come in the summer and they don't count, anyway, do they? Then there's Charley Secor and his wife and two boys, and Vaughan and his wife and son—you know, where you get the honey, at the head of the lane," and so on, till the census is complete. There's a little railroad station that shuts up as tight as a bottle about dark; and two or three hundred yards along the track, where the Moodner River—which is only a brook—makes a sharp turn to the right, only to find itself eternally dammed, there's a red grist-mill with an old-time overshot water wheel that rumbles monotonously all day and only ceases at night to let the water accumulate behind the dam so it can rumble through another day.

It's a typical old-time mill that runs contentedly year in and year out, with one or two men sitting around on sacks of grain waiting for a hopper to run out or a load of stuff to run in or to be sent out. It is surrounded by big, drooping trees; around it numerous chickens pick up a fat living, harried though they are by the miller's almost equally numerous dogs, and white ducks swim in the mill-pond. Quiet and peaceful, and as far removed from the hustle and bustle of modern methods as possible; a page out of a book of quarter of a century ago; one of those places that make one exclaim, involuntarily, "Ye Olde Mill!" and rest one's eyes by looking at it.

That is to say, the mill looks like that kind of a place from the railroad track. To a considerable extent it really is that kind of a place. But if you go a little further and cross the red iron highway bridge that crosses the little river just below the dam the first thing that catches the resting eye is a solid-looking little building of concrete roofed with iron. And on the trunk of the huge tree under which the little house is built is a black-and-white sign that instantly whisks away all the old-time air, and in the glancing of an eye sets the old red mill down in the midst of the rankest modernism. The sign reads

GASOLENE

and the little house contains a store of it, for not only is the mill on the State highway over which automobiles pass in great numbers, but the miller, unencumbered by any particular desire to have his mill run as mills were run in the good old days, has so far ignored the grandfatherly aspect of the establishment as to make use of a motor truck. The smell of gasolene mingles curiously with the dusty odor of the mill; the thudding of the engine drowns out the mild rumble of the overshot water-wheel; and the imprints of big rubber tires obliterate the hoof-marks in front of the mill.

"A motor truck's just as good in the country as anywhere else," asserted the miller, "if you've got work enough for it."

Which is perfectly true. And in this instance there is plenty of work, for the truck carries the burdens that formerly were hauled by from four to six horses. Level roads in that part of the country are merely occasional accidents, occurring when the highway engineers could not conveniently run either up or down a mountain; but not only does the machine run and keep on running to the elimination of horses and to the benefit of the miller's exchequer, but it carries a thousand pounds more than it was intended to carry and does it as a regular thing because the loads happen to come just that way. The makers rated the truck at 3,000 pounds, but the miller consigned the rating to a place where there are no water-wheels and put on 4,000 pounds and isn't sorry—yet.

That the machine stands up under the work it does is a tribute to the way people are building motor trucks in these days. The grades run all the way from long miles of gentle slope to shorter, sharper rises that in a few instances reach over 20 per cent.—and it is safe to assert that one who scoffs at a 20 per cent, grade never had a real good look at one. In the spring when things are softening up the roads in many places are deep with mud, and the truck does miles and miles of low-gear work—and always does it. It's true someone forgot to drain the water jackets one cold night, and they froze up and cracked; but because people live in the country it doesn't follow that they're stupid. They sent for a new pair of cylinders and kept the truck going by plastering cement into the cracks; and so well did the cement do its work that they are holding the new cylinders in case someone should forget again.

The truck is well along in its second year of strenuous service, and has averaged 1,200 miles a month from the beginning. The miller says that it is not unusual for the machine to make a run of 20 miles out and 20 miles back during the forenoon, despite the hills. But there is one thing that very much annoys the miller. The only part of the truck that has given any trouble without strenuous provocation is the big bevel driving gear, which is on the jackshaft, the truck being chain driven. The gear doesn't seem equal to the work that the rest of the track performs so easily, and it lets go every two or three months. So far the miller has put in no less than five new bevels, and he always has a spare one on hand waiting for the inevitable. Constructional peculiarities preclude the use of any gears except those especially made for the truck, and also make it difficult and expensive to put in a complete new jackshaft, though the miller is considering the advisability of taking the bull by the horns and installing a new unit. As to why any owner of a motor truck should put up with such a state of affairs, and why the manufacturer should not at once make the troublesome part good without charge, there is a simple answer. The manufacturer who made that truck manufactures trucks no longer. Besides, the miller exceeded the specified load limit, which has a debilitating effect on guarantees. So things run along as they are, with an occasional sharp jog when the big bevel gets tired of working.

"But does the machine pay for itself in spite of the constant breaking of bevels and the loss of time putting in new ones?"

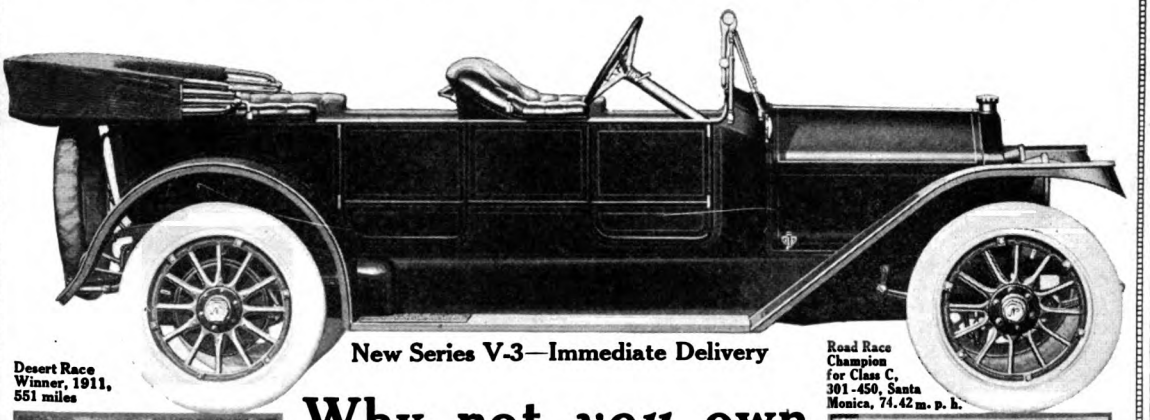
"Yes," replied the miller, "she's a good paying proposition," and from the way he said it one might gather that he could have added an adjective or two without straining his conscience.

Of the automobiles that pass the miller's place not all of them are from outside parts—not by a great many. About every other farmer in the district seems to own his own car, and the way the machines are chased up and down the hills is something akin to uncanny. There is one man who lives on the top of a hill—a long, steep one—and he can't get away without going down and he can't get home without going up. He says he used to kick a few teeth out of the gears occasionally, until he discovered that a clutch was a sensitive sort of thing and always retaliates when suddenly dropped. The farmers depend upon their cars exactly as they do upon their horses, and it is an everlasting tribute to their mechanical handiness that the garage not a great way from the mill has but little to do.

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National

WORLD'S CHAMPION



New Series V-3—Immediate Delivery

Desert Race Winner, 1911, 551 miles



Stock Champion, Elgin, 1911, 305.03 miles



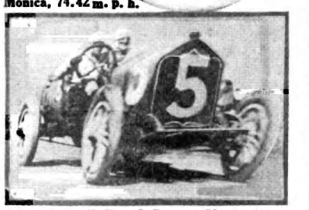
Fastest Mile for Stock Cars, average 89.28 miles per hour



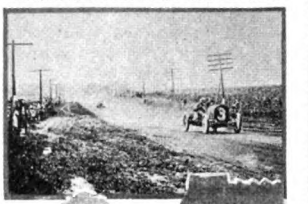
International Champion, 500-mile race record holder, 81.72 miles per hour, actual running time



Road Race Champion for Class C, 301-450, Santa Monica, 74.42 m. p. h.



Free-for-All Road Race Champion, 1911, 202.008 mi., av. 74.628 m. p. h.





Why not *you* own the champion?

There can be but *one* leader. It *is* the *National*. Not once, but year after year it remains supreme—unconquered! Records, demonstrations and actual performances prove this.

A ride today in a National will prove to you how this is possible, despite desperate efforts of the costly foreign cars to wrest laurels from America's defender—the *National*.

The *National's* championship quality is bred into its very fibre and strength. Its power is indefatigable and its control marvelously simple. There is a pride in ownership of the one, absolute leader.

Dignified in appearance, quiet in operation, comfortable and luxurious, the *National* is complete in everything from electric self-starter to concealed baggage compartments.

Five models, $2750 to $3400

Thirteen years' experience

Champion on Speedway or Broadway

National Motor Vehicle Co. Dept. 90, *Indianapolis Indiana*

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1,063,100. Spring Wheel. Elmer G. Woodlee, Altamont, Tenn. Filed Dec. 3, 1912. Serial No. 734,733. (Wheel with spring-cushioned hub.) 1 claim.

1,063,115. Autotruck Body. James N. Brewster, New York, N. Y. Filed Sept. 10, 1912. Serial No. 719,513. (Truck body construction system.) 2 claims.

1,063,117. Tire of Wheels of Vehicles or the Like. John Cairns, Walsall, England. Filed Apr. 14, 1911. Serial No. 621,101. (Thick tread cushion tire.) 9 claims.

1,063,141. Engine Starter. Gregory John Spohrer, Franklin, Pa., assignor to Wilson Motor Starter Company, Franklin, Pa. Filed May 17, 1911. Serial No. 627,653. (Compressed air starter.) 5 claims.

1,063,161. Spring Wheel. Ozro H. Hinds, Le Mars, Ia. Filed Sept. 6, 1912. Serial No. 718,893. (Wheel with hollow spokes enclosing springs.) 2 claims.

1,061,981. Motor Vehicle Running Gear. Howard G. Carr, Hoopeston, Ill. Filed July 8, 1911. Serial No. 637,513. (Resilient frame construction.) 9 claims.

1,062,011. Vehicle Tire. Charles Francis Jenkins, Washington, D. C. Filed June 27, 1912. Serial No. 706,188. (Wood block tire.) 1 claim.

1,062,128. Gearing. Erick J. Swedlund, Williston, N. D. Filed Mar. 2, 1912. Serial No. 681,116. (Friction drive.) 18 claims.

1,062,132. Explosion Motor. Joseph Vollmer, Berlin, Germany. Filed July 21, 1910. Serial No. 573,116. Motor with two concentric cylindrical slide valves) 3 claims.

1,062,154. Locking Device for Fuel Supply Valves. Albert K. Harnly, Reading, Pa. Filed Nov. 14, 1912. Serial No. 731,278. (Gasolene lock.) 3 claims.

1,062,156. Ignition Magneto. Alexander L. Heizer, Chicago, Ill., assignor to Vesta Accumulator Co., a corporation of Illinois. Filed Mar. 2, 1910. Serial No. 546,811. (Magneto with adjustable poles.) 2 claims.

1,062,197. Bearing for Supporting Radiators in Automobile Frames. Oscar Stegeman, Denver, Colo. Filed Aug. 19, 1909. Serial No. 513,588. (Trunnion for radiator suspension.) 6 claims.

1,062,260. Wheel for Vehicles. Charles Calvin Sill, Seattle, Wash. Filed Aug. 7, 1911. Serial No. 642,680. (Wheel with radial helical springs.) 1 claim.

1,062,308. Internal Combustion Engine. William G. Thummel, St. Louis, Mo. Filed Apr. 10, 1911. Serial No. 619,973. (Air pumping cylinder forcing air into cooling jacket of power cylinder.) 3 claims.

1,062,318. Driving Gear. George C. Berlin, Caldwell, Idaho. Filed Mar. 16, 1911. Serial No. 614,921. (Caterpillar type track tread.) 1 claim.

1,062,320. Shock Absorber. Joseph Boland, Pittsburgh, Pa. Filed July 3, 1912. Serial No. 707,444. (Buffer type shock absorber.) 8 claims.

1,062,345. Indicating and Recording Device. Burton Marker, Chester, Pa. Filed March 19, 1912. Serial No. 684,896. (Automatic recording speedometer.) 1 claim.

1,062,401. Pneumatic-Tire Cover. John Thomas Johnson and Frederick George Mason, Caulfield, Victoria, Australia. Filed July 5, 1912. Serial No. 707,729. (Method of making tire fabric.) 2 claims.

1,062,422. Propeller Means for Self-Propelled Vehicles. William A. Sorg, Minneapolis, Minn. Filed May 27, 1912. Serial No. 699,846. (Automobile driven by separate traction wheel between road wheels.) 16 claims.

1,062,426. Puncture-Closing Compound. William J. Watkins, Fort Worth, Tex., assignor of one-half to Nannie G. Drumm, Fort Worth, Tex., and one-fourth to John A. Wisherd, Stanton, Neb. Filed Nov. 5, 1912. Serial No. 729,617. (Liquid for closing tire leaks.) 2 claims.

1,062,441. Shock-Absorber. Walter H. Cook, New Orleans, La. Filed Nov. 14, 1912. Serial No. 731,355. (Auxiliary spring shock absorber for Ford type springs.) 4 claims.

1,062,452. Motor Vehicle. Edward B. Gallagher, New York, N. Y., assignor to Clover Mfg. Co., New York, N. Y., a corporation of New York. Filed Nov. 20, 1907. Serial No. 402,982. (Removable power plant system.) 33 claims.

1,062,462. Tire-Support. Alexander Harnishfeger, Evansville, Ind., assignor of one-half to Moses A. Strouse, Evansville, Ind. Filed Oct. 11, 1912. Serial No. 725,231. (Carrier for demountable rim and tire.) 6 claims.

1,062,472. Wheel. Samuel Kaye, Columbus, Miss. Filed July 12, 1911. Serial No. 638,143. (Drive through universal joint in hub, permitting steering and driving simultaneously.) 6 claims.

1,062,494. Internal-Combustion Engine. Joseph Munden, Bradenville, Pa. Filed Feb. 13, 1911. Serial No. 608,224. (Valve system including both piston valve and poppets.) 3 claims.

1,062,518. Horn for Motor Cars, Motorcycles and Cycles. Etienne Teste, Paris, France. Filed June 22, 1910. Serial No. 568,297. (Multiple tone horn.) 3 claims.

1,062,519. Vehicle Wheel. William T. Thorp, Litchfield, Ill. Filed Oct. 27, 1911. Serial No. 657,033. (Wheel with springs between inner and outer rims.)

1,062,551. Electro-Mechanical System for the Propulsion of Automobiles. Henri iPeper, Liege, Belgium. Filed Sept. 25, 1906. Serial No. 336,122. (Gasolene-electric driving system.) claims.

1,062,567. Tire-Deflation Indicator. Hermann Jacoby, Eberstadt, near Darmstadt, Germany. Filed Oct. 23, 1911. Serial No. 656,202. (Mechanical means for ringing bell when tire becomes deflated.) 5 claims.

1,063,196. Automobile Tire. William F. Haas, Hartford, Conn. Filed Dec. 29, 1910. Serial No. 599,975. (Tire formed of bands of knitted fabric.)

1,063,219. Spring Wheel. Robert Rutherford, Portland, Ore. Filed July 6, 1911. Serial No. 637,090. (Wheel with spring-cushioned hub.) 1 claim.

1,063,221. Tire. Henry C. Seipp, Pittsburgh, Pa. Filed June 24, 1912. Serial No. 705,481. (Tire with rubber-filled steel channels.) 4 claims.

1,063,2444. Variable-Power Transmitting and Controlling Mechanism. Ludwig Maria Dieterich, Kansas City, Mo. Filed March 18, 1908. Serial No. 421,805. (Transmission by both friction disks and gears.) 5 claims.

1,063,286. Shock-Absorber. Gerald H. Richmond, Buffalo, N. Y. Filed Oct. 20, 1910. Serial No. 588,048. (Pneumatic shock absorber.) 3 claims.

1,063,290. Tire-Protector. John T. Ryan, Vallejo, Cal., assignor to American Tire Armor Co., Phoenix, Ariz., a corporation of Arizona. Filed March 13, 1908, Serial No. 420,905. Renewed Sept. 19, 1911. Serial No. 50,255. (Protecting tread.) 2 claims.

1,063,291. Armored Pneumatic Tire. John T. Ryan, Vallejo, Cal., assignor to American Tire AArmor Co., Phoenix, Ariz., a corporation of Arizona. Filed March 26, 1908, Serial No. 423,292. Renewed Sept. 19, 1911. Serial No. 650,256. (Sectional nonpuncturable tread.) 1 claim.

1,063,307. Traction Engine. Alexander H. Welker, Berlin, Ontario, Canada. Filed Jan. 19, 1911. Serial No. 603,520. (Three-wheeled gasolene tractor.) 2 claims.

1,063,323. Crankshaft. Henry L. Bock, Toledeo, Ohio, assignor to William E. Bock, Toledo, Ohio. Filed April 10, 1911. Serial No. 20,214. (Built-up crankshaft.) 10 claims.

1,063,330. Valve Gear for Explosion Motors. Mark B. Crist, Pittsburgh, Pa., assignor, by mesne assignments, to The Colonial Trust Co., trustee, Pittsburgh, Pa., a corporation of Pennsylvania. Filed July 20, 1909. Serial No. 508,636. (Gas control through inlet valve.) 2 claims.

1,063,359. Spring Rim for Wheels. William A. Langjahr, Plymouth, Wis. Filed Jan. 2, 1913. Serial No. 739,610. (Wheel with springs between inner and outer rims.) 1 claim.

1,063,368. Gas Engine. George E. McElroy, Newark, N. J., assignor to McElroy Engine Co., Newark, N. J., a corporation of New Jersey. Filed Feb. 15, 1912. Serial No. 677,851. (Motor with valve recessed into cylinder wall.) 11 claims.

1,063,417. Process of Making Compound Hollow Metal Bodies. Edward G. Cook, Brooklyn, N. Y., assignor to Brass & Copper Products Co., New York, N. Y. Filed Feb. 14, 1912. Serial No. 677,507. (Electro-deposition for making manifolds and the like.) 8 claims.

1,063,440. Internal-Combustion Engine. William Harper, Jr., New Bloomfield, Pa., assignor, by mesne assignments, of three-tenths to Harper Engineering Co., a corporation of New York, and seven-tenths to Thomas A. Nevins, East Orange, N. J. Filed June 20, 1906, Serial No. 322,566. Renewed Oct. 30, 1912. Serial No. 728,727. (Two-cycle motor with port and passage through piston.) 2 claims.

1,063,455. Sparking Device for Explosive-Engines. William S. Liming, Scranton, Pa. Filed Feb. 20, 1907. Serial No. 358,356. (Wiring and switch system for ignition.) 2 claims.

1,063,459. Shock-Absorber. Daniel F. McCarthy, Moline, Ill. Filed Jan. 20, 1912. Serial No. 672,471. (Friction shock absorber.) 1 claim.

1,063,465. Spring Wheel. Otto J. Olson, Courtenay, N. D. Filed Jan. 19, 1912. Serial No. 672,167. (Wheel with spring cushioned spokes.) 2 claims.

1,063,475. Vapor-Engine. William F. Stone, Woodbury, N. J., assignor, by mesne assignments, to The Engineering & Development Co. of America, Salisbury, Md., a corporation of Maryland. Original application filed Feb. 18, 1911, Serial No. 609,477. Divided and this application filed May 12, 1911, Serial No.: 656,847. Renewed Nov. 1, 1912. Serial No. 729,401. (Two-cycle motor with ported piston.) 2 claims.

1,063,477. Engine Valve Mechanism. Oscar Treier, Brooklyn, N. Y. Original application filed March 23, 1912, Serial No. 685,866. Divided and this application filed AAug. 10, 1912. Serial No. 714,327. (Cylindrical valve.) 2 claims.

1,063,480. Vehicle Wheel Rim. James H. Wagenhorst, Akron, Ohio. Filed Jan. 16, 1912. Serial No. 671,492. (Q. D. rim and fastenings.) 5 claims.

1,063,485. Automobile-Brake. Rollin H. White, Cleveland, Ohio, assignor to The White Co., Cleveland, Ohio, a corporation of Ohio. Filed Oct. 9, 1908. Serial No. 456,856. (External contracting band brake and toggle mechanism.) 1 claim.

1,063,490. Liquid Fuel Oil Feeding Governor for Internal-Combustion Engines. James I. Wood, Denver, Col. Filed April 18, 1911. Serial No. 621,818. (Centrifugally operated fuel regulator.) 3 claims.

1,063,500. Demountable Vehicle Rim. Percy B. Bosworth, Akron, Ohio, assignor to The Firestone Tire & Rubber Co., Akron, Ohio, a corporation of Ohio. Filed July 5, 1911. Serial No. 637,030. (Q. D. rim and fastenings.) 7 claims.

1,063,520. Internal-Combustion Engine. Justus B. Entz, Cleveland, Ohio, assignor to The White Co., Cleveland, Ohio, a corporation of Ohio. Filed June 11, 1910. Serial No. 566,293. (Scavenging engine with moving cylinder head.) 24 claims.

1,063,530. Motor Car Wheel. James A. Glenn, Albany, N. Y. Filed Jan. 9, 1912. Serial No. 670,337. (Wheel with curved spring spokes.) 6 claims.

1,063,531. Rim Construction. James A. Glenn, Albany, N. Y. Filed April 26, 1912. Serial No. 693,411. (Rim for wheel with curved spring spokes.) 2 claims.

1,063,561. Automobile Horn. Louis A. Marcotte, Beverly Cove, Mass. Filed Sept. 6, 1912. Serial No. 718,905. (Horn with bell in place of reed or diaphragm.) 3 claims.

1,063,578. Tire or Tread Therefor. William Robert Morrison, Chicago, Ill. Filed March 2, 1911. Serial No. 611,856. (Tire tread of net-like bands.) 6 claims.

1,063,592. Lubricating Device for Explosive-Engine Piston-Rods. Ralph Ragan, Atlanta, Ga. Filed Dec. 14, 1911. Serial No. 665,726. (Piston-rod gland lubricator.) 7 claims.

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American La France Fire Engine Co., Elmira, N. Y.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co. Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co..Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.

B

Bartholomew Co.....Peoria, Ill.
Benton Motor Car Co.....Benton, Ill.
Berg Carriage Co., L.....Dallas City, Ill.
Briggs-Detroiter Co.....Detroit, Mich.
Buckeye Mfg. Co.....Anderson, Ind.

C

Canadian Standard Auto & Tract. Co., Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works....Racine Jct., Wis.
Chadwick Engineering Works. Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
Colby Motor Car Co.....Mascn City, Ia.
F. Coleman Carriage & Harness Co., Ilion, N. Y.
Commerce Motor Truck Co...Detroit, Mich.
Corbitt Automobile Co....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, O.
Crow Motor Car Co.....Elkhart, Ind.
Jas. Cunningham Son & Co..Rochester, N. Y.

D

Geo. W. Davis Carriage Co...Richmond, Ind.
Di Dion Bouton.....New York City
Dorris Motor Car Co.....St. Louis, Mo.

E

Elkhart Carriage & Harness Co. Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, O.

F

F. A. L. Motor Car Co.....Chicago, Ill.
F. I. A. T. Company...Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.

G

Gramm-Bernstein Co.....Lima, O.
Gramm Motor Truck Co.....Lima, O.
Gramm Motor Truck Co...Walkerville, Ont.

H

Havers Motor Car Co....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co..Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Howard Motor Car Co....Connersville, Ind.
Hupp Motor Car Co.....Detroit, Mich.

I

Imperial Automobile Co.....Jackson, Mich.

J

Jackson Motor Car Co.....Jackson, Mich.

K

Kelly-Springfield Motor Truck Co., Springfield, O.
King Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Krit Motor Car Co.....Detroit, Mich.

L

Lancia Co.....Turin, Italy
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co...Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America., Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.

M

W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
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Martindale & Millikan.....Franklin, Ind.
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Mitchell-Lewis Motor Car Co...Racine, Wis.
Moline Automobile Co.....East Moline, Ill.
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N

Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co. Indianapolis, Ind.
Nordyke & Marmon Co....Indianapolis, Ind.
Norwalk Motor Car Co. Martinsburg, W. Va.
Nova Scotia Carriage Co....Kentville, N. S.
Nyberg Automobile Works...Anderson, Ind.

P

Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co...Detroit, Mich.
Palmer & Singer Mfg. Co., Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, O.
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.

R

Regal Motor Car Co.....Detroit, Mich.
Renault-Freres Selling Co....New York City
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada, St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.

S

Sayers & Scoville Co.....Cincinnati, O.
Seagrave Co.....Columbus, O.
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co. New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works, South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, O.
Stafford Motor Car Co.....Kansas City, Mo.
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, O.
Stegeman Motor Car Co....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell)..Dayton, O.
Studebaker Corporation.....Detroit, Mich.
Stutz Motor Car Co.....Indianapolis, Ind.

U

U. S. Carriage Co.....Columbus, O.

V

Vandewater & Company....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.

W

Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
Wichita Falls Motor Co..Wichita Falls, Tex.
Willys-Overland Co.....Toledo, O.
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Z

Zimmerman Mfg. Co.....Auburn, Ind.

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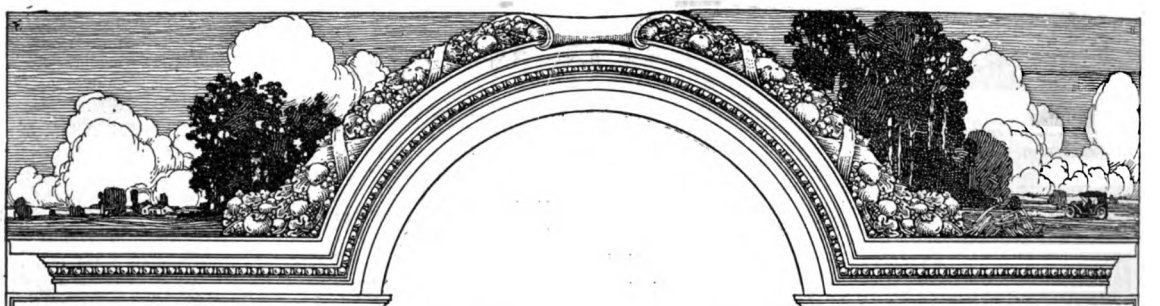
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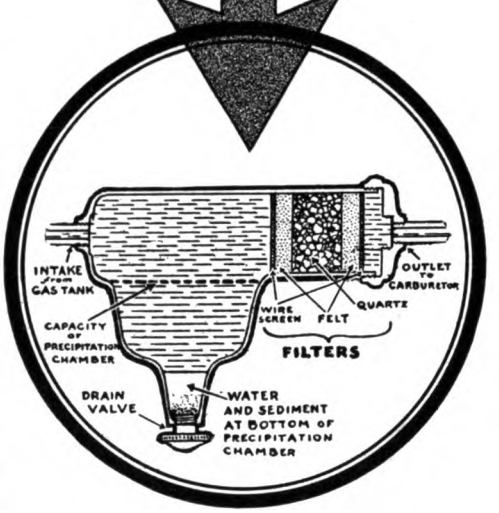
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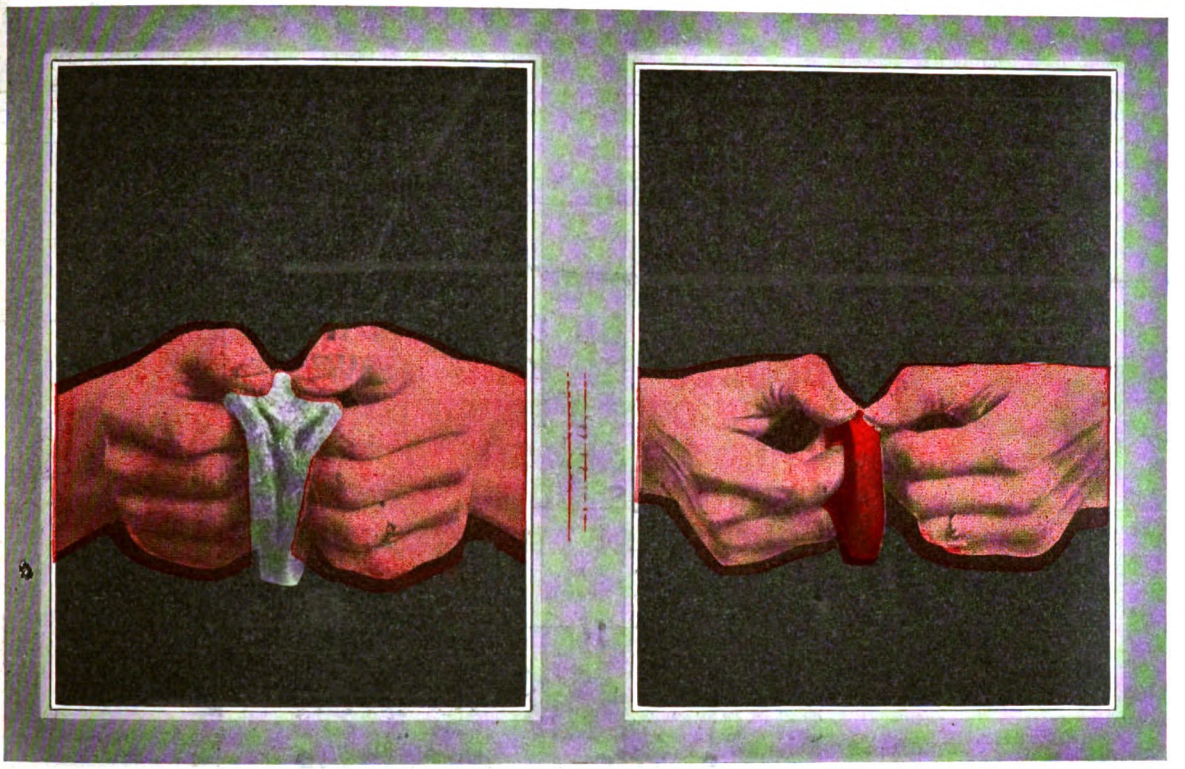


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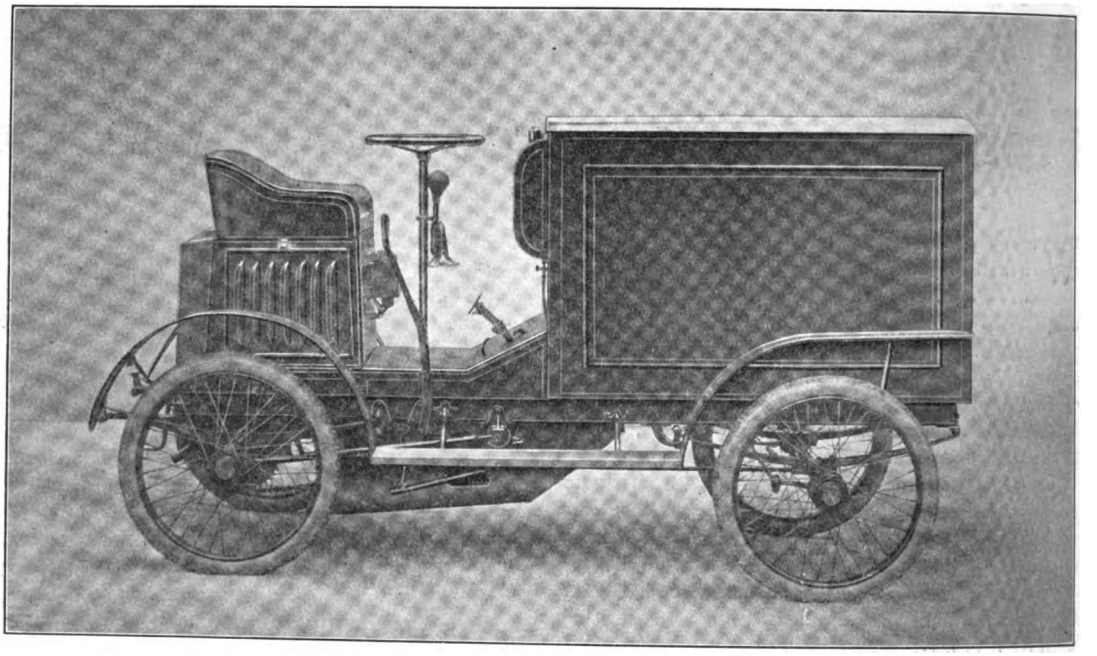
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THE ONE MAN

Who is by many regarded as the leading genius of the automobile business recently remarked in the presence of a group of automobile men that if properly handled THE MOTOKART should prove the FORD OF THE COMMERCIAL VEHICLE INDUSTRY. Proper handling involves among other considerations the establishment of a country-wide distribution system, the appointment of energetic, hustling agents at every logical point. Our advertising campaign is today bringing in hundreds of possible user inquiries from points where we have not as yet established connections. We want reliable dealers in every county in the United States. If we are not to your knowledge represented in your territory, write us at once for sales proposition.

SPECIFICATIONS

Engine: Two Cylinder, Four Cycle, 3⅝ x 4, Water Cooled.

Wheel Base: 69".

Tread: 44".

Over All Dimensions: Length, 106"; Height, 56"; Width, 52".

Box Dimensions: Length, 51"; Height, 32"; Width, 32".

Friction Drive, Wire Wheels equipped with 26 x 2½ Non-Skid Tires, Pressed Steel Frame, Semi-elliptic Springs, Steel Body.

Capacity: 400 lbs.

Price: $400.00

TARRYTOWN MOTOR CAR CO., Inc.

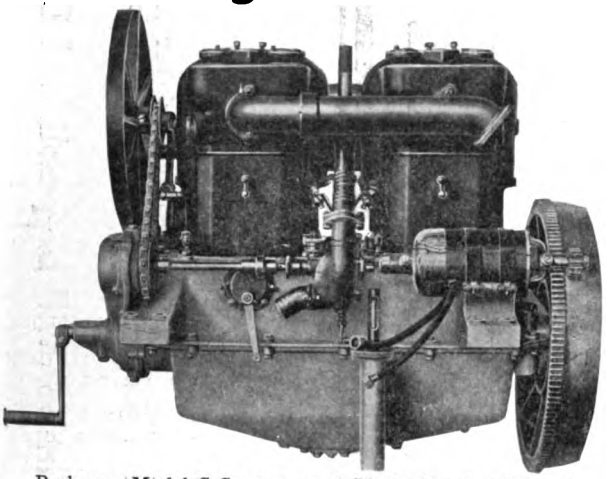
Factory: Tarrytown, N. Y.

Office: 1790 Broadway, N. Y.

Address all correspondence to New York Office

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Ordinarily it is Neither Good Business Nor Good Taste to Notice Competitors' Tactics in One's Advertising. But Sometimes it is Necessary.

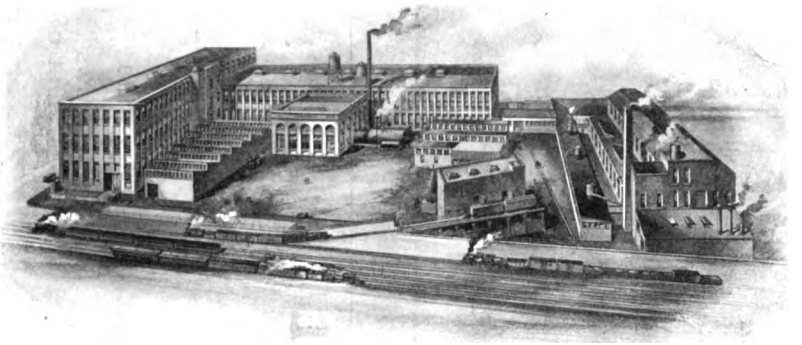


Rushmore Model C Starter on 38 H. P. Simplex Engine

It has come to our notice that certain makers of starting and lighting equipment, finding themselves unable to compete with the Rushmore System on the basis of engineering performance, have circulated statements to the effect that we are in financial Difficulties and are seeking large loans.

Such statements are either ignorantly or wilfully false in every particular. We do not need more money, and are not seeking it.

Since we began business 22 years ago we have held to the policy of conservative growth and of freedom from entangling alliances or divided control. Our present manufacturing plant, including the additions recently made, is owned by us free and clear. Our live assets today exceed $450,000, unencumbered with notes, mortgages, or bonds of any sort.



For many years we have discounted our bills and paid all obligations promptly when due, and we shall continue to do so. Our present obligations are represented only by current bills amounting to much less than $10,000; and these are being regularly paid as they fall due. Our credit is open to any one who wishes to look us up in the mercantile agencies or elsewhere.

We believe that no manufacturer in our line can present a better showing, or is better equipped to give entire satisfaction to his customers. We believe that none is in a better position to weather the strain of a dull season, or to "deliver the goods" on time when heavy orders come.

We manufacture in the above plant every part of our product, whereas our slanderers are mere assemblers or sales-agents of the great electric "trusts."

RUSHMORE DYNAMO WORKS

Plainfield, N. J., Nov. 3rd, 1913. S. W. RUSHMORE, President.

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"That Publication serves the Manufacturer best which helps the Dealer most"

MOTOR WORLD'S

"Before Shows" Number

PUBLISHED DECEMBER 18th

Foreknowledge is the knowledge worth while.

Last year, Motor World's first "Before Shows" Number presented to its readers, two weeks before the Show, a most completely illustrated and accurate account of what they would see at the Show.

Its success vindicated our foresight in publishing it. It vindicated our judgment in creating (for it was the first of its kind ever published) what is conceded to be one of the most practical examples of trade journalistic enterprises ever conceived and carried out.

This year, Motor World's "Before Shows" Number will be published December 18th---New York Show January 3d to 10th.

It will be bigger and better than last year. The idea of a Before Shows Issue is too practical---too basic---to be a "one time" success only.

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MOTOR WORLD,
1600 Broadway, New York.

.....1913

Gentlemen:—

We would like to have the particulars about your "Before Shows" Number.

Very truly,

Firm Name.....

Address .....

Let your fore-sight, which was vindicated so strongly last year, be your hind-sight this year. Be fore-handed in this matter. Send us your space reservations early now. We have a Service Department here which can help you in your advertising plans. The earlier we get together, the more intelligent and efficient our service will be.

Shall we send you a layout showing what we consider an effective way of presenting your goods to the trade?

Fill in your firm name and address—tear out this page and mail it to us. It will secure quick, intelligent co-operation

MOTOR WORLD PUBLISHING COMPANY

W. H. TRIPP
Western Advertising Manager
1101 Ford Building, Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York

Out December 18th

FORMS CLOSE DECEMBER 13th

"That Publication serves the Manufacturer best which helps the Dealer most"

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UNIVERSITY OF MICHIGAN LIBRARIES



How Often Do Passing Tourists Stop and Ask You the Way?

Every place of business should have handy a copy of the

Automobile Blue Book

Get people in the habit of coming to your store or garage for road information and they will follow the habit and buy things from you.

The greatest touring months are now coming and all the 1913 books are here in stock ready for immediate shipment.

Get Yours Today

Sent prepaid on receipt of $2.50 per volume

Vol. 1—New York State and Adjacent Ontario.
Vol. 2—New England and Coast Provinces.
Vol. 3—New Jersey, Pennsylvania and Southeast.
Vol. 4—The Middle Western States.
Vol. 5—From the Mississippi to Pacific Coast.

Motor World Publishing Company, **1600 BROADWAY NEW YORK**



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Sell Spark Plugs That Give Real Service

BOSCH PLUGS, in addition to being carefully constructed, in addition to being made from the finest of materials obtainable, have 6 special features which make them the better kind of spark plug—Just the plug your customers want.



$1.00 Each
is the selling price. Shipped from nearby distributors, thus reducing shipping costs.

1 Crescent Electrodes minimize electrical resistance affording the maximum spark, therefore maximum power at all speeds. An easy starting motor is always assured.

2 Undue wear of electrodes prevented, consequently long life is certain at a vital point.

3 Insulator is Steatite, a stone unaffected by intense heat, carbon or oil, and unbreakable by vibration or accident.

4 Massive and an exclusive gastight construction—assures full power at any pressure or any speed. Compression leaks are impossible.

5 BOSCH PLUGS are "excessively" durable; they last as long and serve as well as you expect a "Bosch Quality Product" will.

6 BOSCH PLUGS are as good as Bosch Magnetos, you can have every confidence in them.

Write for "Locating the Spark Plug"
It's educational and will be sent you free

BOSCH MAGNETO CO., 224 West 46th St., New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

Bosch Distributors are located at: Portland, Me.; Boston, Buffalo, Rochester, Philadelphia, Pittsburgh, Baltimore, Richmond, Va.; Memphis, Toledo, Milwaukee, Minneapolis, Des Moines, Omaha, Kansas City, Mo.; St. Louis, Denver, Salt Lake City, Seattle, Portland, Ore.; Sacramento, Los Angeles, Honolulu. Other service stations in the important centers of United States and Canada.

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Not One Return In Five Years

Cleveland-Canton Automobile Springs

That, we believe, is a record that has never been equalled in the history of motors and motor parts. Let us tell you why.

For many years the ordinary carbon spring was the best spring obtainable for automobile use.

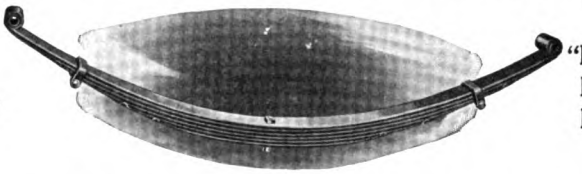
And a great part of automobile upkeep cost resulted from breakage and settling, of these unreliable springs.

But motor car makers and motor car users demanded springs of greater endurance, of greater flexibility.

And, in Cleveland-Canton Chrome Vanadium Springs we have been able to meet that demand. In five years not ONE of these springs was returned because of breakage or settling.

Cross-Rolled Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

We use a superior steel—chrome-vanadium. And we roll this steel not only **longitudinally,** but transversely as well.

Then it is heat-treated in oil—not simply flashed or water-chilled, but scientifically tempered. After tempering all the fitting of the parts is done by hand. And this gives a uniformly perfect bearing not possible by any other known method.

So Cleveland-Canton Chrome-Vanadium Springs are not only amazingly durable, but give perfect riding qualities. They absorb shocks, stand jars and jolts that would ruin ordinary springs.

It is certainly to your interest to find out more about them. To those who want to know what **real** spring comfort and economy mean, we will gladly send booklet and proofs. Write today.

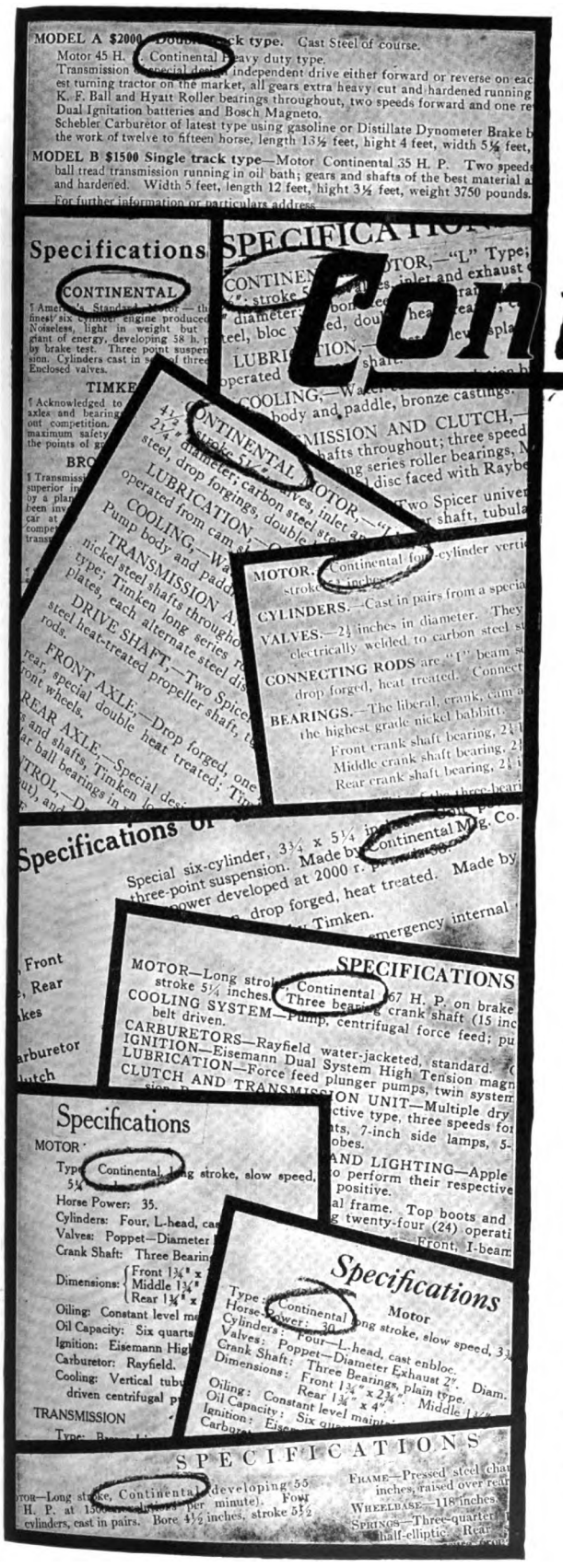
Best Grade—Chrome-Vanadium
Next Best—Special Analysis

TRADE CLEVELAND CANTON MARK

The Cleveland-Canton Spring Co.

Canton, Ohio, U. S. A.

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First in the Specifications

Continental Motors

The first thing—the really big thing—is the Motor. It stands for five out of seven of the good qualities for which any car or truck is selected:

- ✓ **Power**
- ✓ **Speed**
- ✓ **Endurance**
- ✓ **Economy**
- ✓ **Flexibility**
- **Appearance**
- **Simplicity**

For such an overwhelming reason the motor, ninety-nine times out of a hundred, comes first in the specifications. It really establishes the standing of a motor vehicle.

In more than 60 makes, the Continental Motor—America's Standard—has been chosen to head the list, to make the first appeal. That right has been won by the Continental during 10 years of success—mechanical and financial.

And during 1914, fully forty thousand men will buy motor vehicles largely because they are Continental equipped.

The current of public opinion is running mighty strong.

"Continental Motor" to head a list of specifications is an asset of good-will almost beyond price.

Add this asset to your product and watch the sales jump.

Continental Motor Mfg. Co.

DETROIT, MICH.

Factories: DETROIT, MUSKEGON

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INVA





INVADER OIL is the best---***not*** because we say so, or because it is our product, or because we are anxious to sell it, ***but, because the oil itself possesses certain definite concrete chemical tests which prove it to be better than any other.***

¶ With the same range of fire tests, and the same range of viscosities that other oils have, INVADER OIL is lighter in color and lighter in gravity.

¶ ***This simply means that INVADER OIL is freer from carbon than other oils of equal body and consistency, and are therefore better for automobile lubrication.***

FACTORIES:

NEW YORK.....92 Pearl Street
PHILADELPHIA.....113 Arch Street

BRANCHES:

BOSTON.....284 Columbus Avenue
WASHINGTON.....512 Kenois Building
PHILADELPHIA.....113 Arch Street

INVADER OIL

Lessees of Charl

MAIN OFFICE: 81 BROA

Store: 1906 Broadway

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DER OIL

¶ The sales of INVADER OIL have increased 212% during the past eight months over the corresponding period of last year. This is an indication that these facts are being appreciated in an unusually substantial manner.

¶ ***Territorial agents are in a position to fill orders as promptly and at the same prices as the main office, or any branch of the INVADER OIL CO.***

COMPANY, Inc.

Kellom & Co.

TREET, NEW YORK

ew York

TERRITORIAL AGENTS:

Los Angeles, Cal.	W. D. Newerf Rubber Co.
San Francisco, Cal.	W. D. Newerf Rubber Co.
Tacoma, Wash.	Union Motor Car Co.
Omaha, Neb.	Lininger Implement Co.
Detroit, Mich.	Boyer-Campbell Co.
St. Louis, Mo.	Beck & Corbitt Iron Co.
Chicago, Ill.	Motor Car Supply Co.
Salina, Kans.	Lee Hardware Co.
Kansas City, Mo.,	American Lubricating & Supply Co.
Portland, Me.	James Bailey Company

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street **NEW YORK CITY**



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1420 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 6304 Penn Ave.
Cleveland, 9451 Euclid Ave.
Charlotte, 200 Church St.
Memphis, Madison Ave. and 6th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 200 Hennepin Ave.
Omaha, 1026 Harney St.
San Francisco, 1420 Van Ness Ave.
Los Angeles, 405 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 12 South 20th St.
Denver, 1000 Broadway
Albany, N. Y., 123 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co. (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y. Wm. D. Rose, Paris; D. Eney & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvis, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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A starter that will actually SPIN your motor on the COLDEST day

Here is a starter that employs the simplest, most powerful, most easily understood, most positive form of energy known—compressed air. Any dealer or garageman can understand how it works and why it is sure and positive.

The Thurber Rotary Starter will SPIN any gasolene motor—and start it. It is not affected by heat or by cold—by rain or the elements. It is positive in operation. The double-acting valve insures an absolutely air-tight system.

It is a FOOL-PROOF system—it does not require constant "monkeying" to keep it in order. The only attention needed is lubrication of the pump twice a week.

Simple— Powerful—

For reliability and certainty of operation it beats every other system. It can be applied to any car, and requires no special lay-out. It goes OUTSIDE—so it does not require any work on the engine.

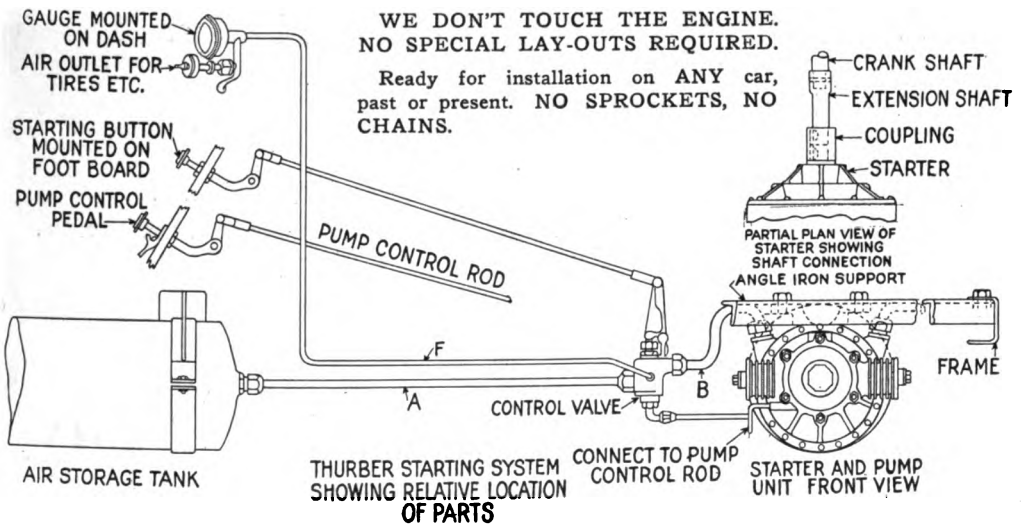


Efficient--- Practical---

And this starter is PRACTICALLY EVERLASTING. There is absolutely nothing to wear out.

Thurber Rotary Starter

Consists of three main parts viz: 1—Small rotary (the cranking device) with air pump attached. 2—Air tank. 3—Two pipes and double-acting valve.



The lay-out above shows method of application.

TO START ENGINE—The driver simply presses his foot on the button which operates the patented double action valve and the AIR is delivered to the starter which instantly spins the motor.

MANUFACTURERS—Investigate the Thurber Rotary Starter at once. Get our booklet which tells all about it.

DEALERS—You have seen starters come and go. All kinds. Here is something that is mechanically and practically right. It does the work and we GUARANTEE positive satisfaction or your money back.

Write at once for full information

THE THURBER ROTARY STARTER CO., 687 ATWATER EAST DETROIT, MICH.

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CAPACITY
GURNEY
ENDURANCE

Trials are the Order of the Day

But erring and unfortunate men in high and low estate are not the only objects of judicial investigation. So impersonal a thing as a ball bearing must be subjected to the most relentless trial in testing laboratories and out on the road to discover any hidden fault or weakness. These courts are above any suspicion of partiality. Before these courts the Gurney Ball Bearing has been repeatedly on trial. The verdict is singularly unanimous.



FIAT JUSTICIA

THE VERDICT

Steel—Uniformly good—none better.
Hardening—Uniform—None soft, none brittle.
Balls—The best obtainable.
Accuracy—Unequaled by any other, American or Foreign.
Concentricity—Unequaled by any other.
Load Capacity—Greater than any other.
Thrust Capacity—Much greater than any other.
Endurance—Greater than any other.

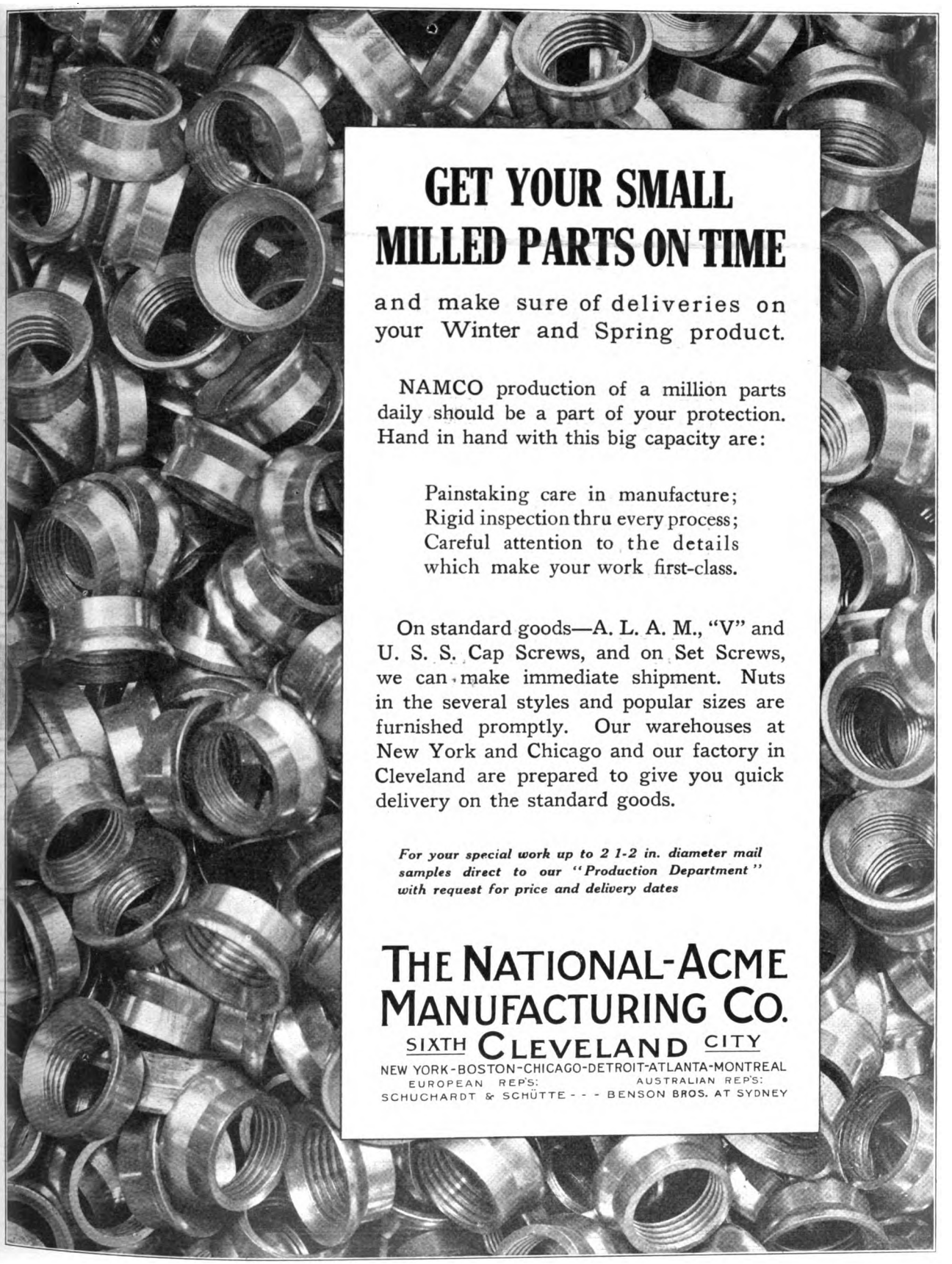
THE SENTENCE

Is written on an order blank.

GURNEY BALL BEARING COMPANY

Jamestown, N. Y.

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GET YOUR SMALL MILLED PARTS ON TIME

and make sure of deliveries on your Winter and Spring product.

NAMCO production of a million parts daily should be a part of your protection. Hand in hand with this big capacity are:

Painstaking care in manufacture;
Rigid inspection thru every process;
Careful attention to the details which make your work first-class.

On standard goods—A. L. A. M., "V" and U. S. S. Cap Screws, and on Set Screws, we can make immediate shipment. Nuts in the several styles and popular sizes are furnished promptly. Our warehouses at New York and Chicago and our factory in Cleveland are prepared to give you quick delivery on the standard goods.

For your special work up to 2 1-2 in. diameter mail samples direct to our "Production Department" with request for price and delivery dates

THE NATIONAL-ACME MANUFACTURING CO.

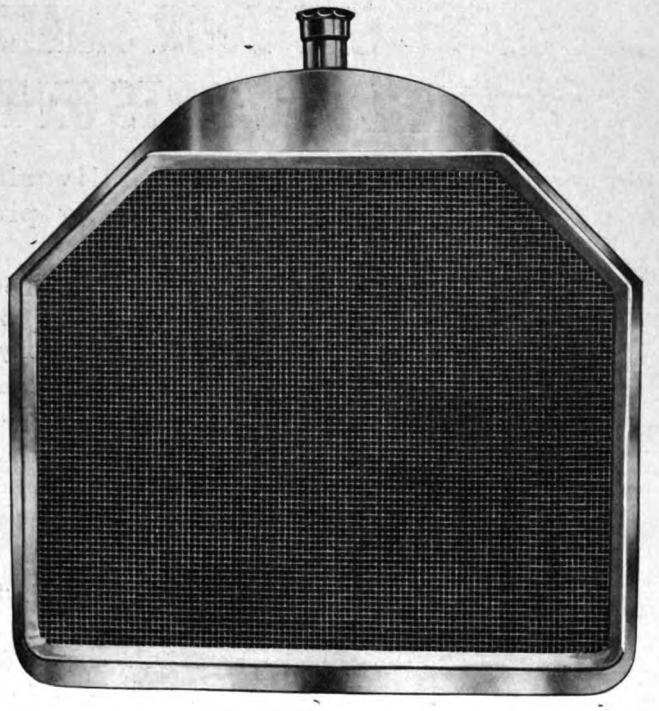
SIXTH CLEVELAND CITY

NEW YORK-BOSTON-CHICAGO-DETROIT-ATLANTA-MONTREAL

EUROPEAN REP'S: SCHUCHARDT & SCHÜTTE - - -

AUSTRALIAN REP'S: BENSON BROS. AT SYDNEY

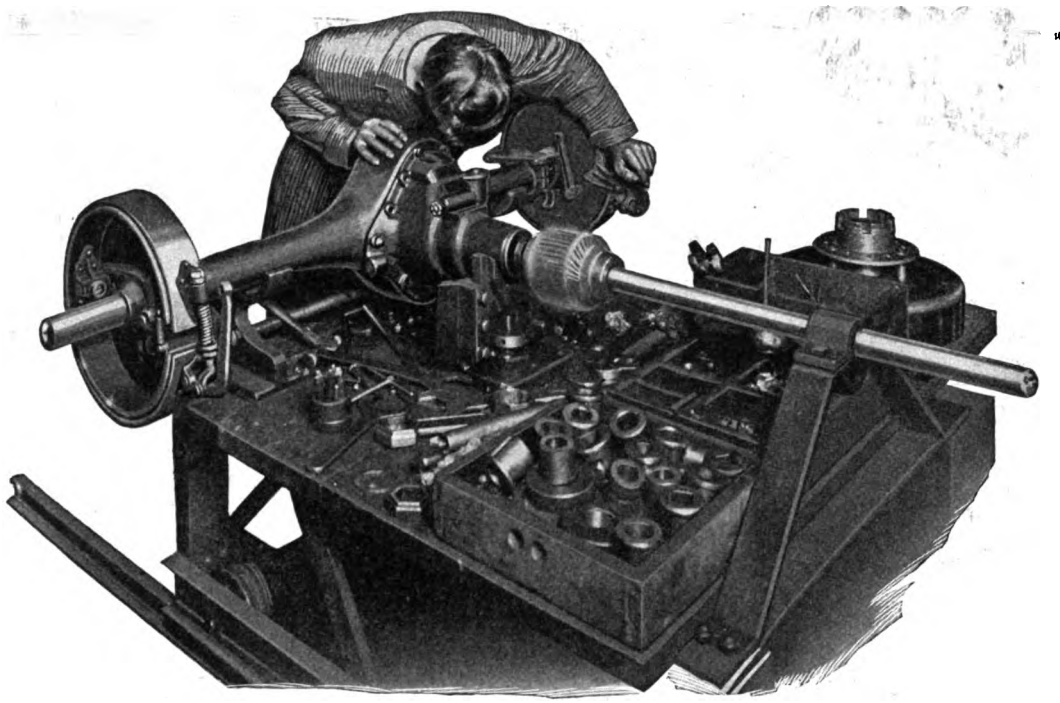
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We will not build a radiator in our factory that is not honestly and scientifically designed to do the work required of it. Our continued business relationship with the makers of America's best cars, year after year, offers abundant testimony of the soundness of this policy.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

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Listening to the Song of a "Sweet-Running" Axle

IN one corner of the final inspection department stands a man with an ear for silence.

One by one, as the big rear axles come forward, for their diplomas, he listens to their song and grants or rejects their plea.

There is no appeal from his demand for silence. His word is final in the "sweet-running" test of

TIMKEN-DETROIT AXLES

It takes hundreds of parts to make a Timken-Detroit Rear Axle. It takes thousands of separate inspections to be positive that each one of these parts is right—and right means that every moving part must stand up, month after month, year after year, under the gruelling test of actual service.

But no matter how many tests the individual parts may have passed in the course of construction, Timken ideals demand that these parts prove their right to a place in the finished axle—and prove it under the actual running conditions they will meet when the axle goes into the finished car.

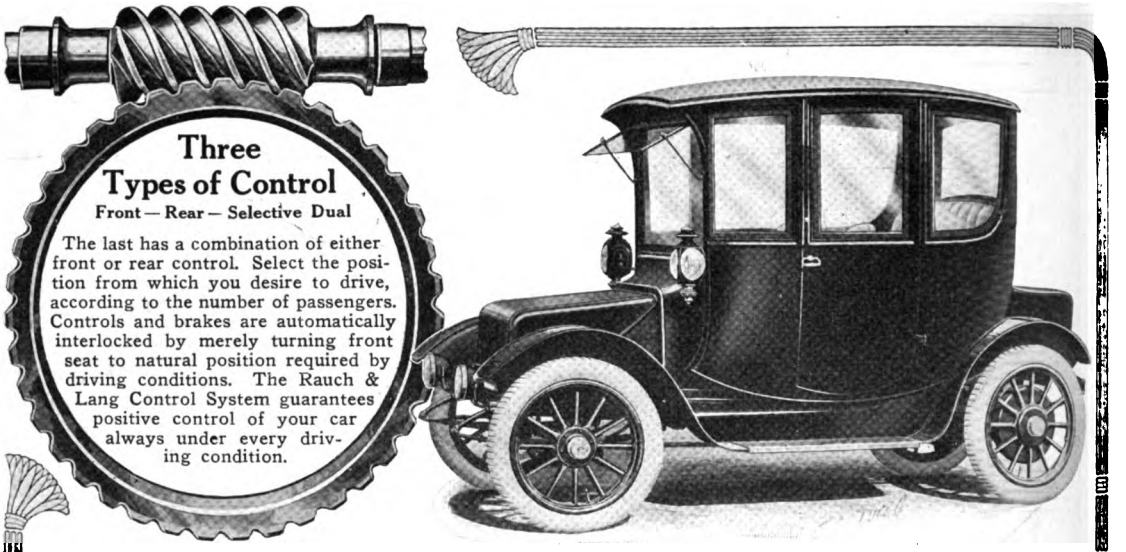
So, as each axle sings its song, the final inspector, with his ear to the housing, listens for the slightest discord. And when a Timken-Detroit Axle gets his final O. K. the soft hum of the revolving gear and pinion is barely audible to even a practiced ear.

It is this constant striving toward perfection by men who put their whole hearts in the work, whose one ideal is Timken Quality from rough forging to finished part, that produces axles which give the service we know axles should give.

THE TIMKEN-DETROIT AXLE CO.
Detroit, Michigan

25

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Society Adopts

The New Rauch & Lang Worm Drive

Again has the Rauch & Lang Electric asserted its premiership as Society's chosen car.

The success of the new worm drive has been immediate. This feature means the continued leadership in driving quality—just as the beautiful body lines, rich finish and ultra refinement of every detail have always marked supremacy of Rauch & Lang construction.

Hundreds have already ordered the new car. They are enthusiastic because the Rauch & Lang Straight Type Worm Drive (top mounted) which is superior to all others means a greater-than-ever all-'round efficiency, a silence that is manifest, a power-economy hitherto unknown, and a driving simplicity that appeals to the most timid woman.

The Rauch & Lang is the highest-priced Electric on the market. Its value is readily apparent to those who seek a car of artistic and mechanical perfection.

Any Rauch & Lang agent will gladly demonstrate. Catalog mailed on request.

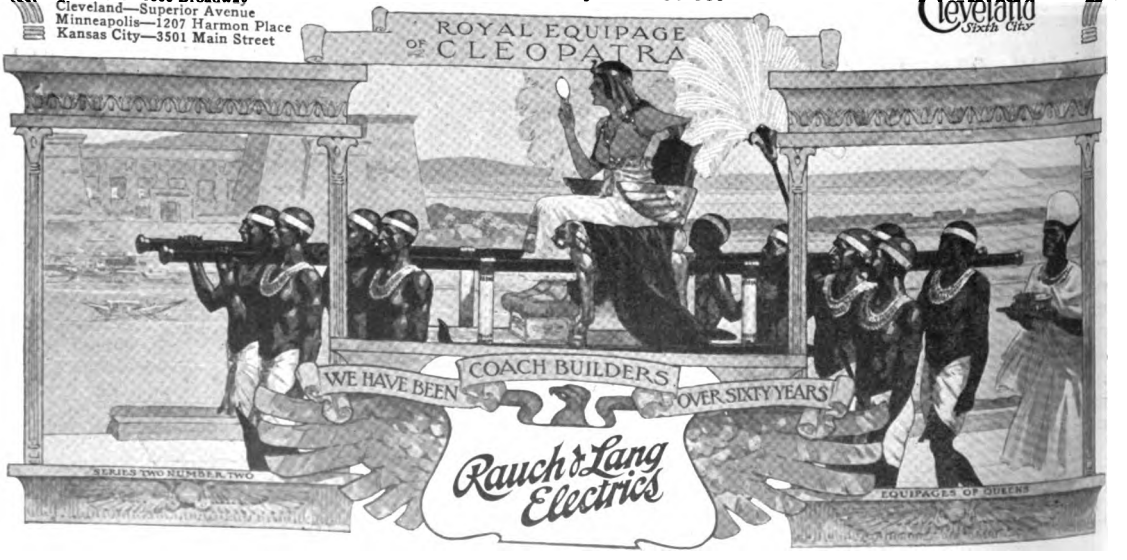
MAKERS OF COACH HISTORY—For over sixty years Rauch & Lang have been building fine vehicles for a select patronage. In each successive vehicle era they have been accorded the leadership. Strict adherence to lofty art ideals and a wonderful mechanical perfection have won and held the acclaim of people of refinement. (147)

THE RAUCH & LANG CARRIAGE COMPANY

2204 West Twenty-fifth Street

Cleveland Sixth City

Branches at—
New York—1800 Broadway
Cleveland—Superior Avenue
Minneapolis—1207 Harmon Place
Kansas City—3501 Main Street

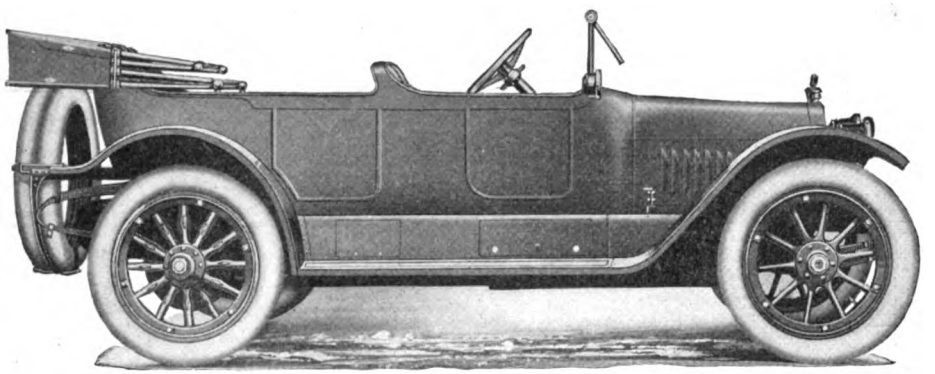


Digitized by Google

Again Stearns leads the way with a new type—

a body type which embraces so many pleasing variations from traditional design that it has established a new standard. As exemplified in the new four- and six-passenger Stearns-Knight Touring Cars, this new type opens up vast selling opportunities for the dealer who is quick to grasp the possibilities of a new tendency in design.

These new cars, like the famous Toy Tonneau model, first brought out by Stearns in 1907, mark the beginning of a new trend in American motor car design. Distinctive in lines, in upholstery and trimming, and in detail refinements, they offer unusual advantages in appearance and riding comfort. And they have the added advantage of the wonderfully efficient Stearns-Knight chassis construction—an advantage which places them as far in advance mechanically as they are in body design.



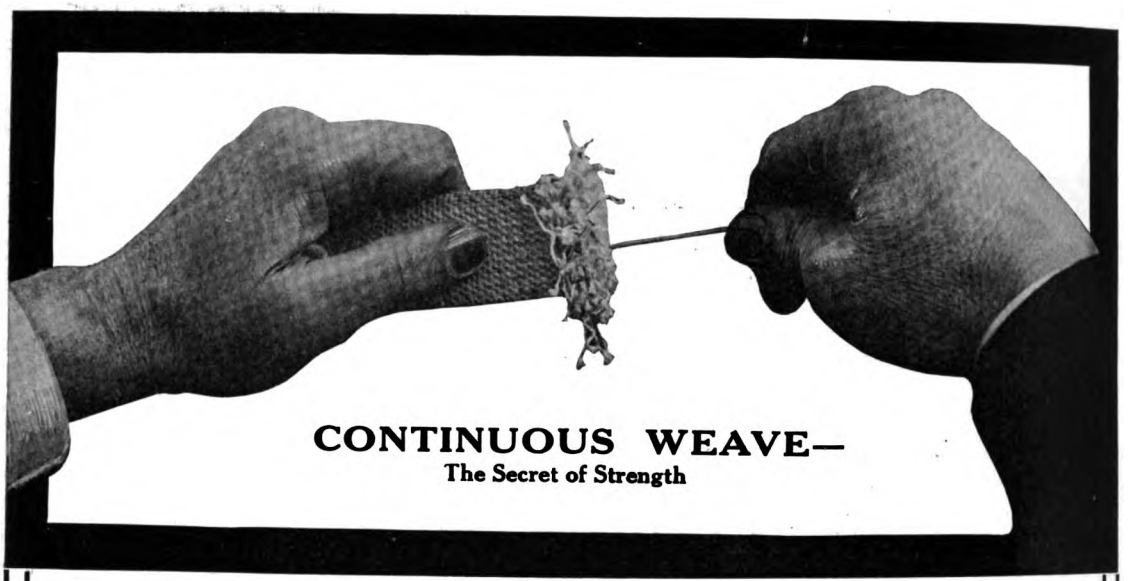
Four-Cylinder Four-Passenger Light Touring Car

Four-Passenger Light Touring Car	**Four Cylinder—$3750** **Six Cylinder—$4850**
Six-Passenger Touring Car . .	**Four Cylinder—$3900** **Six Cylinder—$5000**

Equipment absolutely complete, including Gray & Davis electric starting and lighting system, windshield, speedometer, Klaxon horn, top, slip cover, curtains, etc. Wire wheels (one extra wheel) optional at slight additional charge.

THE F. B. STEARNS COMPANY
Cleveland, Ohio

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CONTINUOUS WEAVE—
The Secret of Strength

EVERY automobile should be equipped with Rebound Straps because of their insurance against broken springs, their assistance to more comfortable riding and the part they play in reducing, not alone tire wear, but the strain on the cars mechanism, incident to rough roadways, as well.

Any rebound strap which is not strong enough to withstand the strain of snubbing the rebound of the heaviest touring car axle is no better than no rebound strap at all.



Gilmer Rebound Straps are now standard equipment on many of the best cars in America. Several of these cars are equipped with exceptionally sturdy rear axles and the Gilmer Rebound Strap is the only one which met the conditions to the entire satisfaction of these manufacturers.

Gilmer Rebound Straps are the strongest made. The straps we recommend for certain cars are capable of withstanding strains or blows several hundred pounds more than is possible under any set of actual conditions.

The strength of Gilmer Rebound Straps comes as a result of the weave employed and the excellence of the material (note continuous fabric) used. Each of our straps is treated with a weather and waterproof dressing thus insuring their strength against the influence of the elements.

Send for our samples, prices and arrangement with dealers

L. H. Gilmer Company

52 North Seventh Street, Philadelphia, Pa.

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Send for a Free Sample Section of the Fisk Pure Gum Tube

Its elasticity, texture and thick wall are self-evident proofs of *quality* and endurance.

Dealers: Stock with Fisk Tubes NOW and Urge Your Customers to Buy Them

because (with proper care) they will be giving just as good service a year from now.

Pure para rubber, vulcanized to the right degree, does not harden or become porous. It makes the logical and economical tube for continuous use, or over winter storage—It *is* The Fisk Tube.


Time to Re-Tire

Write Dept. 23 for Our Dealer Proposition

THE FISK RUBBER COMPANY

Factory and Home Office **Chicopee Falls, Mass.**

Forty-two Branches in Principal Cities

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Let Your Motor Pump Your Tires



This, Mr. Dealer and Mr. Manufacturer, is the new talking point in selling cars for 1914. Many cars are now evenly matched. Horsepower or wheelbase is little argument. Complete equipment is the clincher. But no car is completely equipped without the

Four Cylinder KELLOGG Tire Pump

The best tire pump made is necessary for proper tire inflation, which tire makers say eliminates most tire repairs. The Kellogg is the standard tire pump, because it is used solely by the makers of better cars. No other can approach it.

Dealers who can offer Kellogg-equipped cars say: "We make the most of our opportunity to talk this standard pump." Less fortunate dealers should not accept "something just as good" or no pump at all. You can have your cars "Kellogg-equipped," or install them yourself.

Every dealer and manufacturer should write for our book—"Air On Tap." There's money in it for you.

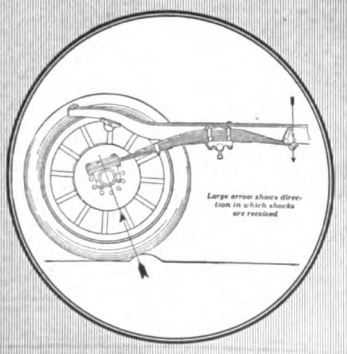
KELLOGG MANUFACTURING CO., Main and Circle Sts., Rochester, N. Y.

NEW YORK
1744 Broadway

SAN FRANCISCO
444 Market Street

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1112 S. Michigan Avenue

"NONE SO EASY RIDING" —and the Reason



KING

A KING Owner Is Our Best Sales-Agent

Every time he drives his car or compares it with others of near price he is convinced anew, and convinces his friends, of the KING'S high value for

$1095 WITH EQUIPMENT

Famous Ward Leonard Starter and Generator $100 net additional

Rough Roads Smoothed Out

by the KING'S FLOATING CANTILEVER SPRINGS which are a modification of those used with such notable success by the Lanchester Motor Car Company of England. They are set at right angles to the direction taken by the resistance offered to road shocks. The arrows in the illustration show how this adjustment receives and throws back all jars. These springs make auxiliary shock-absorbing devices wholly unnecessary, give ample road clearance and freedom from "side swing," guarantee complete comfort to occupants, and assure a long, economical life to car and tires.

KING MOTOR CAR COMPANY, 1300 to 1324 Jefferson Avenue, DETROIT, MICH.

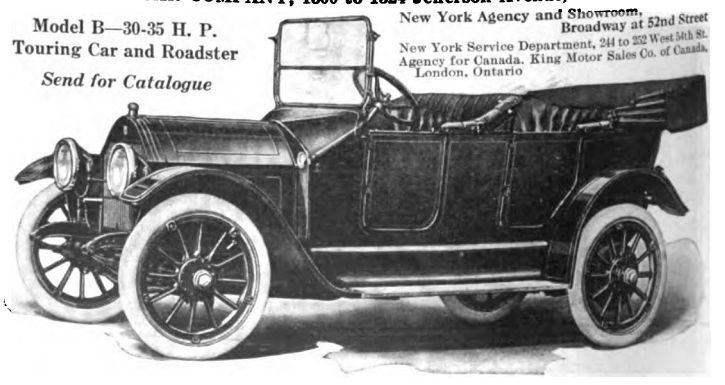
Model B—30-35 H. P.
Touring Car and Roadster

Send for Catalogue

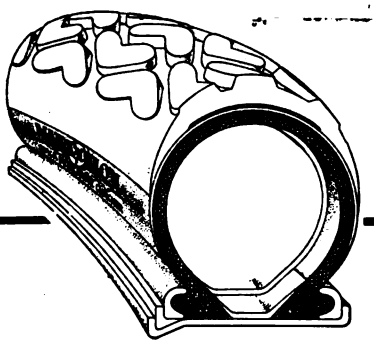
New York Agency and Showroom, Broadway at 52nd Street

New York Service Department, 244 to 252 West 54th St.

Agency for Canada, King Motor Sales Co. of Canada, London, Ontario



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Utmost Quality

Proved by the Tire

Mr. Dealer, if your trade wants **the best in tires,** we want to tell you about Marathon.

We build in the **Utmost in Quality.** That's proved by the tire.

We factory-insure 4,000 miles service. And the tire's service to users, proves 4,000 to be the minimum. The average mileage is far above that figure.

Study these reasons:

Sea Island Fabric: We use nothing but Sea Island. That's the finest tire fabric obtainable. It's highest in tensil strength. It's the costliest fabric we can buy, but the cheapest for tire users—it gives utmost service.

Finest Rubber: We use only finest rubber in building Marathon. See the tire and you won't question that fact. We spare no expense to attain highest possible quality.

Hand Built By Experts: Marathon tires are hand built by expert tire men, very slowly. Hurrying is not permitted. This slow, exacting method costs us more—cuts our profit—but it insures **perfect construction.** It insures utmost service to users.

Concentrated Tread: Note how we heap up the tread rubber where the wear comes. That feature avoids waste. And it increases mileage.

Live Steam Single Cure: We single cure Marathon tires, in live steam. That gives unitized construction—makes all parts one. Tread and fabric separation are impossible. The live steam single cure also increases wear resistance.

Insured 4,000 Miles: The above are reasons how we factory-insure Marathon tires for 4,000 miles. And they are reasons why the average service is far above 4,000.

We absolutely guarantee every Marathon to give at least 4,000 miles. Motorists want this 4,000 mile tire. Do you see why you should sell Marathon?

Write for our exclusive dealers proposition

THE MARATHON TIRE & RUBBER COMPANY

Cuyahoga Falls, Ohio

Distributors in most large cities

MARATHON

SPEED ENDURANCE

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Kelly - Springfield

Automobile Tires

Making good tires is a question of live rubber and dead earnestness.

Kelly-Springfield Tire Company

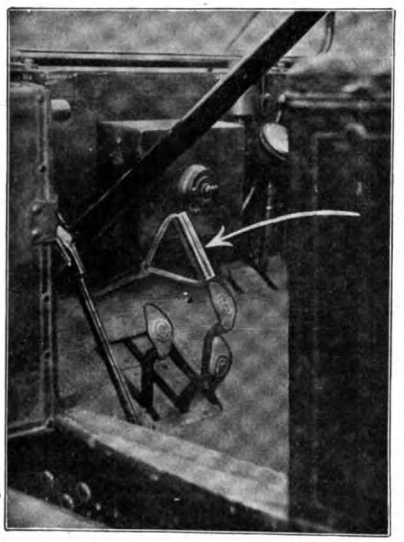
Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Boss Rubber Co., Denver, Colo.
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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

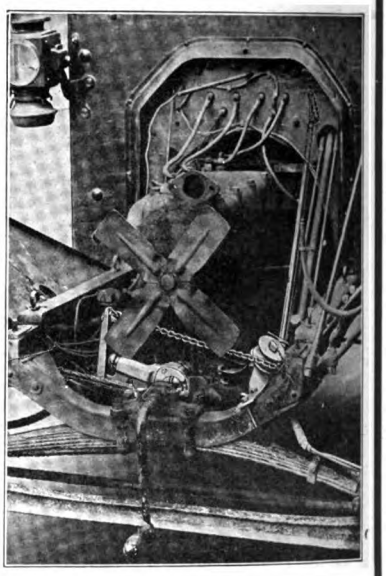
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Universal Manufacturing Co.

Racine, Wisconsin

TRADE MARK

Billings & Spencer

Thorough experience in the drop-forging field—complete and modern equipment for the production of highest quality drop-forgings and drop-forged products—have enabled the Billings & Spencer Company to maintain their position as the standard drop-forgers in the automobile field.

A few of the many B trademarked products:

Automobile drop-forgings
Stock and special forgings
Steering connections
Drop hammer equipment
Automobile tools and tool kits
All types of machinists' tools, etc.

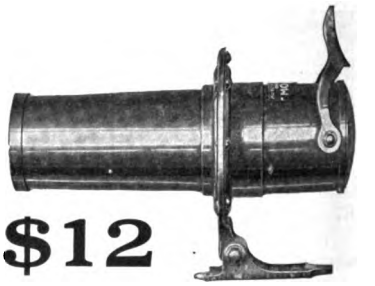
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MOTOPHONE

A Mechanically Operated Horn



$12

NO Adjustments Battery Troubles **NO Electrical Wiring Battery Expense**

A Loud Steady Blast is emitted by a slight touch of the lever—As compelling as any motor horn— Eliminating the constant care of the electric motor, the recharging of storage batteries, adjustments and cost of maintenance.

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220 Taaffe Place **Brooklyn, N. Y.**

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

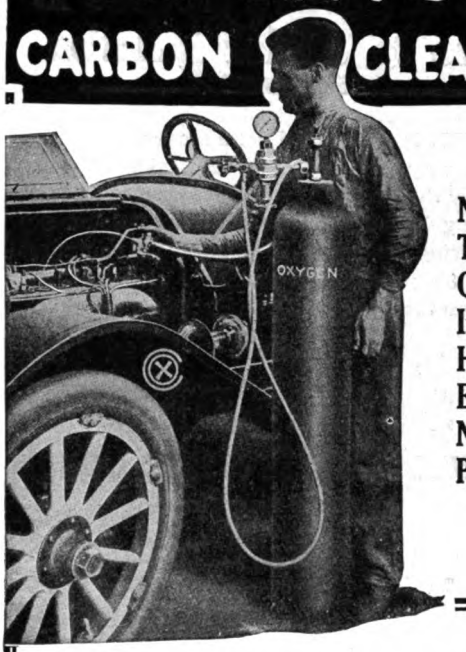
Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by
DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

COX OXYGEN CARBON CLEANER



New
Thorough
Quick
Inexpensive
Harmless
Efficient
Necessary
Profitable

The first really efficient and thorough method of cleaning carbon out of the cylinders is the new Cox Oxygen Carbon Cleaner. It consumes every particle of carbon, even in corners where it could never be scraped out, without the slightest possibility of harming the cylinders.

It takes from 6 to 10 minutes to clean each cylinder, averaging 30 minutes for a four-cylinder motor and 45 minutes for a six. Any workman can do it. Does not require experience or expertness. Absolutely safe to handle.

For Public Garages

The profit possibilities for you in the Cox Oxygen Carbon Cleaner are only limited by the number of your customers. You do the work in one-tenth the time and only a fraction of the cost of any other method. Motorists will pay you well to clean their cars regularly. It is just as necessary as washing the car. This new method will quickly establish the custom of regular cleaning.

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For private garages in which more than one or two cars are kept, the Cox Oxygen Cleaner is a good investment. It pays for itself in the greater economy and improved running of the car.

Write Us Today

and we will prove that your profit per cylinder is almost gross—that you can actually pay for the carbon remover several times over inside of a week—this has been done.

Get the information—read the detailed facts—learn still more about the integrity and responsibility back of the house that guarantees every claim made for this—the only REAL carbon cleaner.

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New York City
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COX BRASS MFG. CO., Albany, N. Y.
Gentlemen: Please send me full information about the Cox Oxygen Carbon Cleaner.
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Address.....
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75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

USE A

SCHRADER
Universal Tire Pressure Gauge

and Save Your Tires

Price, $1.00

For Sale by

A. SCHRADER'S SON, Inc.
32 Rose Street, New York

RECEIVER'S SALE
Entire Automobile Plant of
R. C. H. Corporation
Detroit, Michigan

The property of the R-C-H Corporation will be offered at Public Auction on the premises, Detroit, Mich., under order of the United States District Court, on

Tuesday, November 11th, at 10 A.M.

The property will be offered in both parcels and bulk. Conditions of sale may be obtained of the Receiver. The property comprises the following, subject to revision as of day of sale:

Real Estate (16.57 acres and factory buildings)	$201,000.00
Plant Equipment and Machinery	213,889.75
Materials, Supplies and Branch Stocks	313,968.28
Cars	14,530.00
Accounts Receivable	60,634.58
Notes Receivable	3,175.00
	$807,197.61

The plant is equipped for the manufacture of a $900.00 five-passenger touring car; is located in the heart of the industry, with railroad siding, and is ready to resume business, with orders for a large number of cars. The R-C-H car is widely advertised, at an expense of $324,000. The different parcels of the plant are also admirably situated for use as separate units. There are an office building, a foundry, machine-shop, drop-forge plant, and assembly building. The parts business is important, nearly 9,000 cars being in use. The stock of materials is large and well assorted.

For particulars address:

SECURITY TRUST COMPANY
Detroit, Michigan **Receiver**

6 to 8 Days Time Saved

In the painting of every vehicle you turn out.
How much will that be worth to you in a year?
At least ⅓ the paint shop labor saved.
How much will that net you?

Valentine's Celox Rapid System

will finish a vehicle from the wood or metal up, in 4 to 7 days. It is a Valentine system in every sense, thoroughly practical, easy of application, and producing a handsome and durable finish.

It is in use in many factories and hundreds of repair shops.

We are prepared to make a demonstration of the Celox Rapid System in any factory—or to send the material for a complete try-out at our own risk.

WRITE FOR TRY-OUT OFFER.

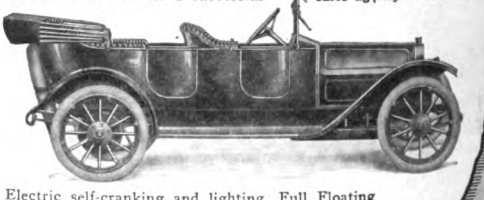
Valentine & Company

456 Fourth Avenue NEW YORK | 343 S. Dearborn Street CHICAGO | 74 Pearl Street BOSTON

OhiO

OhiO 4-50 Price $1750

The OhiO Line for 1914 is the strongest you can get. 35 and 50 Horsepower "Fours"—60 and 80 Horsepower "Sixes." The sturdy construction and superb performance of each car in the OhiO Line are unequalled in any American car. At OhiO prices, no better foundation for a successful sales agency can be found.



Electric self-cranking and lighting, Full Floating Rear Axle, Left Drive and Centre Control, Multiple Disc Clutch, Warner Speedometer, Mohair Top, Rain Vision Windshield, Demountable Rims (one extra), Metal Bodies, 10-in. Upholstery, full equipment of tools, etc.

4-35 5 Passenger.....$1275
4-50 5 Passenger.....$1750
6-60 5 Passenger.....$1985
6-80 7 Passenger.....$2485

The Crescent Motor Co.,
Cincinnati, Ohio.

Cooperative Dealer Agreement Most Liberal Ever Offered

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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of
Cleveland Automobile Club.
Touring
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Better Service—Longer Life
from
J-M Dry Batteries



J-M Dry Batteries are unqualifiedly guaranteed to give satisfaction under any and all conditions. Should they fail to do this, we will furnish new batteries or refund the purchase price.

Take three J-M Dry Batteries and three of the make you are now using, connect them in series, and from results obtained we feel convinced a new SATISFIED customer will be added to our rapidly growing list.

Three capacities: 20, 30 and 35 amperes; 1½ volts per cell.

Ask your dealer for J-M Dry Batteries. If he cannot supply you, order from our nearest branch.

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H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products. TRADE ASBESTOS MARK Asbestos Roofings, Packings, Electrical Supplies, Etc.

Albany, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Syracuse

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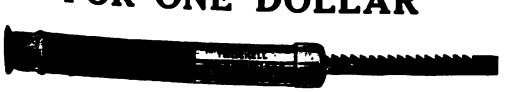
Look to your Tires

YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New
Positive Lock Stop
Twitchell Air Gauge

Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



For Sale by Jobbers, Dealers, Garages or

The Twitchell Gauge Company
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DIXON'S GRAPHITE
Transmission and Differential
GREASE
No. 677



Use this on your automobile—or motor truck—and note the difference in the running qualities. More engine power acts as driving power—less as "wearing-out" power destroying the gears. The secret is in the Ticonderoga Flake Graphite mixed with the pure mineral grease. The theory and practise of auto lubrication are presented in booklet No. 23, "Lubricating the Motor," sent on request.

Made in Jersey City, N. J. by the
JOSEPH DIXON CRUCIBLE CO.
Established 1827

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Cut out the Oil Lamp Nuisance



Get rid of those bad-smelling, old-fashioned oil lamps. Every time you want to light your oil lamps you have to get out of your car.

You can light all lamps right from the seat when your car is equipped with

J-M MOBILITE ELECTRIC LAMPS

These lamps cost about one-third as much to install and only one-third as much to operate as standard electrical equipment. They can be easily and quickly installed. Will burn from 300 to 420 hours on six 30 amp. J-M Dry Batteries.

J-M Mobilite Lamps consist of a vulcanized rubber socket fitted with a special Tungsten bulb and a powerful lens and reflector. Used for dash lights, tail lights, speedometer lights and interior car illumination. Also for motor boats, camps, etc.

Price, $3.00 each. Order from our nearest branch if not at your dealer's.

Write nearest Branch for Booklet

H. W. JOHNS-MANVILLE CO.

Albany	Cleveland	Louisville	Philadelphia
Baltimore	Dallas	Milwaukee	Pittsburgh
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A profit making device for—Supply Houses, Garages and Tire Agencies

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It will give you the answer

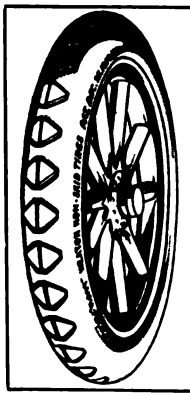
THE HALE-CHRISTY CO.
CLEVELAND, OHIO

Hupmobile

"32" Touring car, fully equipped	$1,050
"32" Roadster, fully equipped	1,050
"32" Touring Car or Roadster with Westinghouse two-unit electric generator and starter; electric lights; oversize tires, 33 x 4 inches, demountable rims, extra tire carrier at rear	1,200
"32" 6-Passenger Touring Car, fully equipped	1,200
With same options as above	1,300
Coupe $1,350 Delivery Wagon	1,075

All prices F. O. B. Detroit

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Swinehart Non-Skid Tires

The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
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SPLITDORF

"Always There"

The SPLITDORF "TS" TRANSFORMER is interchangeable with any type tube or dash coil and can be attached to any car. We will make a very liberal allowance on an old coil in exchange for one of the new style.

Write TO-DAY for particulars

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98 Warren Street, Newark, N. J.

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AXLES AND SPRINGS ARE INVINCIBLE

THE SHELDON AXLE COMPANY
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CONSISTENT

ROAD CHAMPION OF AMERICA

The Tacoma, Santa Monica, Elgin and Corona road races were won hands down by Stutz cars equipped with the consistent Wisconsin Motor—the drivers never raising the hood. Winning all these big road events of the year has accorded Wisconsin Motors the title of Road Champion of America. Write for catalog describing the following sizes:

3⅜	x 5	in. 4 cyl. Enbloc
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4¼	x 5	in. 4 cyl. T Head
4¾	x 5½	in. 4 cyl. T Head
5¾	x 7	in. 4 cyl. T Head
3⅜	x 5½	in. 6 cyl. Enbloc
4	x 5	in. 6 cyl. Three Enbloc
4¼	x 5	in. 6 cyl. T Head
5¼	x 7	in. 6 cyl. T Head



WISCONSIN MOTOR MFG. CO.
Dept. 32 Milwaukee, Wis.

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COLE

The Standardized Car

The car that started the stampede to standardization

A Cole franchise is a valuable asset to any dealer. Find out about it.

Cole Motor Car Co. of Indianapolis

1914 Marion 1914

6 cylinder Touring	$2150
6 cylinder Roadster	$2150
6 cylinder Sedan	$2950
6 cylinder Coupe	$2650
4 cylinder Touring	$1650
4 cylinder Roadster	$1650
4 cylinder Coupe	$2150
4 cylinder Touring	$1475

We have a most attractive dealers' proposition on this attractive line. Write for details today.

MARION MOTOR CAR CO. 904 Oliver Ave. INDIANAPOLIS

48 SIX KISSELKAR 60 SIX

The new KisselKar 48 "Six" at $2350, with the big 60 "Six" at $3150, give the KisselKar real leadership in the "Six" field. Strikingly handsome cars of unusual comfort. Extra liberal wheelbase — roomy tonneaus — powerful, flexible motor—big wheels and tires. Fully equipped—electric lighted and started—left hand drive, center control. The KisselKar 40 "Four" at $1850 is the leading value in its class.

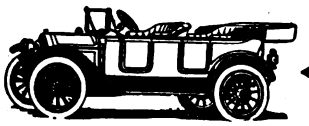


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159 Kissel Avenue
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Ford
THE UNIVERSAL CAR

The lowest-priced, most economical closed car on the market. Six-passenger—4 cylinder—20 horsepower. Price includes two 6-inch gas lamps, generator, three oil lamps, horn and tools, including jack—f. o. b. Detroit. Get particulars from Ford Motor Company, Detroit, Mich.



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Model 31 108 Inch Wheel Base

The Completely Equipped Empire five-passenger touring car for $950—Equipment includes Demountable Rims, Oil Sight Feed, Dash Air Adjustment, Mohair Top and envelope, Windshield, Prest-O-Lite tank, Speedometer and Eisemann Magneto

EMPIRE AUTOMOBILE COMPANY, Indianapolis, U.S.A.

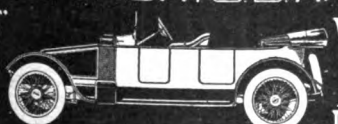
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Found Only on High Grade Cars

THE AMERICAN BALL-BEARING CO.
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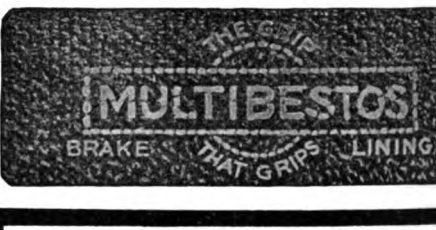
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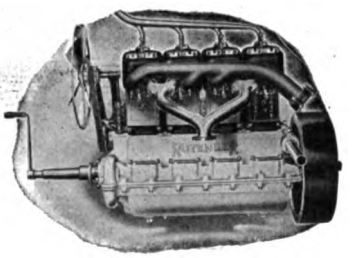
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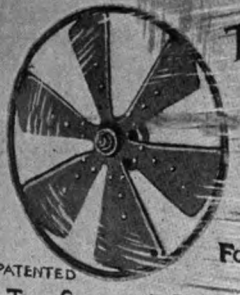
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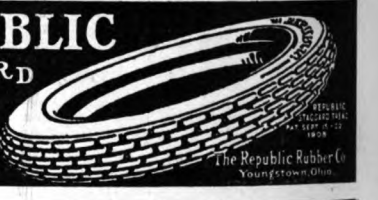


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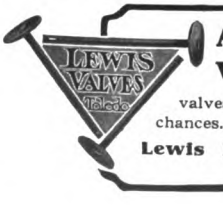
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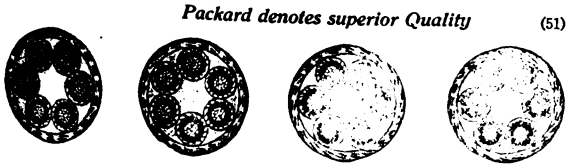
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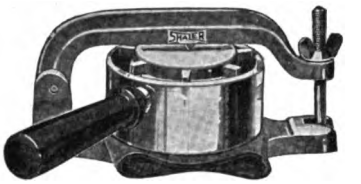
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Diamond chemists discovered how to produce Vitalized Rubber—pure, young, lusty rubber put through a process that toughens and makes it road-resisting, with no loss of life or elasticity.

The demand this season for More Mileage Vitalized Rubber Diamond Tires has broken all records. It's the tire you want—the tire that makes good for everybody everywhere.

Equip with Diamond Tires

BEST FOR AUTOMOBILES, BICYCLES AND MOTORCYCLES

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THE KLAXON IS NOT AN "ELECTRIC HORN"

THERE'S a big difference.
Explain it to your customers before they buy a signal, rather than let them find it out afterwards.

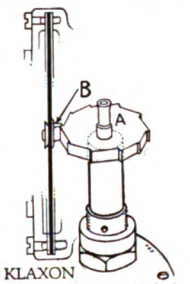
The principle of operation is different

The Klaxon is a noise-machine.

Its diaphragm is vibrated by a toothed wheel.

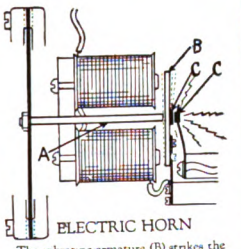
This wheel is rotated by an electric motor;—or, in the case of the Hand Klaxon, by a train of gears that attain high speed under pressure on the push-rod.

Each double vibration means that one tooth of the glass-hard steel wheel slips past the glass-hard steel button on the diaphragm.



KLAXON

The glass-hard toothed wheel (A) strikes the glass-hard button (B) on the diaphragm.



ELECTRIC HORN

The vibrating armature (B) strikes the adjustable rod (A) which is attached to diaphragm, and breaks contact at points (C-C) Unless these points are made of platinum irridium, they soon wear down and the mechanism becomes inoperative

The diaphragm of an "electric horn" is vibrated by a "buzzer"—the same as that used for door-bells, pantries and offices.

Each double vibration means a spark between two points.

Unless these points are made of platinum irridium—the cost of which is prohibitive — they quickly wear off and the buzzer is useless.

The note is different

THE KLAXON NOTE is loud. It is sharp and clean-cut—totally unlike the nasal "buzz" of an electric horn. One Klaxon "tiger" (a short, abrupt note made by lightly touching the Klaxon push-button) is more effective than a dozen "buzzes." Yet it makes less actual noise. Klaxon noise is "concentrated"—not drawn out.

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With the new Studebaker "Four" and the new Studebaker "Six," the Studebaker dealer is well fortified.

In both he has a car literally without an equal at the price.

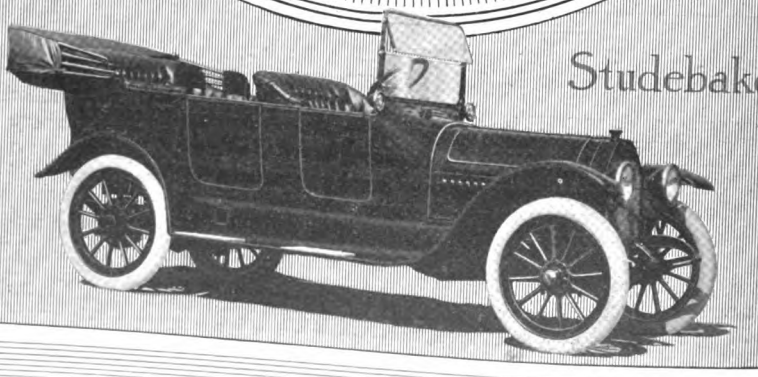
On top of that he has the name "Studebaker" as sponsor for the character of the cars---and their unmatched value.

Studebaker cars have been easy to sell---and every Studebaker dealer will confirm this---so you can easily figure the result with the splendid Studebaker sales organization behind the new cars.

Studebaker

Detroit, Mich.

"Four" Touring Car - - $1050
"Four" Landau Roadster - $1200
"Six" Touring Car - - $1575
"Six" Landau Roadster, $1950
"Six" Sedan, $2250



Studebaker "SIX"
$1575

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MOTOR WORLD

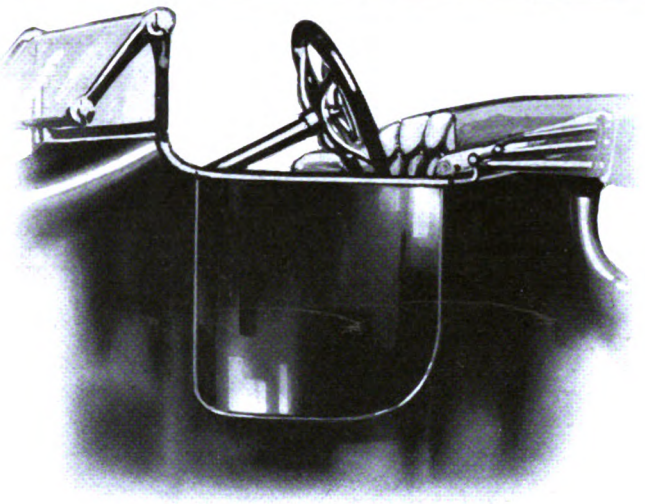
A Trade Paper Giving the World's Motor News

Vol. XXXVII
No. 8

New York, November 13, 1913

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Auto Body
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1858

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Dealers know that cars equipped with Truffault-Hartford Shock Absorbers are Easy Sellers

Year by year *Truffault-Hartford equipment* has become a stronger factor in car sales.

Today twenty-seven leading American cars—in the forefront of popularity and topping the list in the volume of their sales—are furnished with Truffault-Hartford Shock Absorbers as *standard equipment.*

These cars enjoy the reputation among dealers of being the easiest riding and easiest selling cars on the market.

Ease of riding now plays a far more important part in the sale of a car than it did a few years ago. Women have become motoring's greatest enthusiasts. Their demand is emphatically for *the easy riding car.*

Hence, the adoption of Truffault-Hartford equipment on the part of twenty-seven car builders was a shrewd move with a telling result. Women now speak of these cars in terms of highest praise.

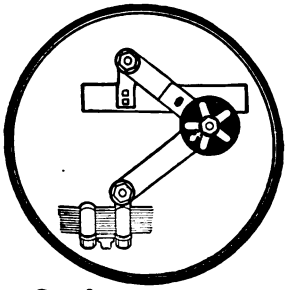
Dealers looking to their own interests cannot afford to ignore the woman's demand for comfort. It is she who often casts the deciding vote that closes a sale.

Nor can they afford to sell cars that do not include the famous Truffault-Hartford Shock Absorber. Cheaper devices of doubtful efficiency are offered, but the leading car builders have unanimously decided on the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer and the Best"

Dealers selling cars without Truffault-Hartford equipment have a right to insist upon this valuable sales-help from their manufacturer.

Made in five models, from $60 per set for the New Automatic, to $15 for the smallest model for light cars.



Catalog on Request

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Comfort—given by the resiliency of an extra quantity of new, pure, long-lasting rubber.
Economy—given by the increased service of a thicker tread.
These are the vital points of tire service as found in Firestone Non-Skid Tires—a trio of advantages that automobile dealers everywhere are emphasizing with the zeal born of Firestone experience.

The dealer who helps his customers to reach the goal of tire satisfaction by selling Firestone Non-Skids creates a tire constituency that is ever loyal. The car owner who, following the advice of users, insists that his dealer supply him with Firestone Non-Skid, enjoys a reduction of tire troubles and a marked increase in automobile comforts.

YOUR DEALER WILL TELL YOU

that the name "Firestone" stands for tire quality. He will tell you that the ends of security, comfort and economy are served by the use of Non-Skid Tires. The Firestone Non-Skid tread gives longest wear, greater resiliency, added protection against the shocks of bad going.

It presents to the surface of the road numerous edges, angles and hollows that grip the highway and prevent the skidding which was so great a terror to motorists before the days of the Non-Skid.

In thus affording security against tire accidents and insuring longer wear, Firestone Non-Skid Tires are doubly economical. They perform service for the car owner's pocketbook and for his peace of mind.

The high grade of new rubber used in the manufacture of all Firestone Non-Skid Tires prevents the sharp safety edges and angles from chipping—and even after these have worn down, a sturdy tire remains.

For longer wear, increased resiliency, greater security, tire and gasoline economy, tire-heat radiation, the Firestone Non-Skid is ideal, whether in Autumn, Winter, Spring or Summer. For all climates—for rear and front wheels—it is the year-round, complete service tire — with a proved value greatly in excess of its slightly higher cost—the

"Most Miles per Dollar" tire in every sense of the term

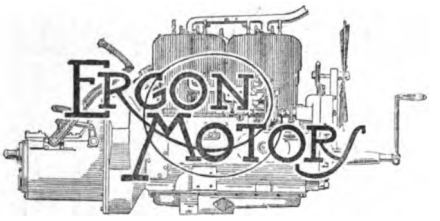
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"America's Largest Exclusive Tire and Rim Makers"
AKRON, OHIO, AND ALL LARGE CITIES
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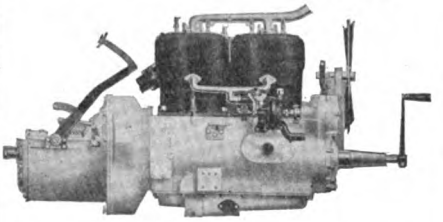
Firestone
NON-SKID TIRES

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AS motor specialists we keep our shop methods right up to the minute. This has been of the greatest advantage to us in the past four or five months as it has enabled us to keep up with our deliveries as promised, with a minimum amount of overtime.

We have, of course, had to enlarge our plant considerably to take care of a growing business, but the point we wish to make is this; that in the time of our hardest rush no customer's work was



slighted in the least, inspection did not lag for a second, limits were not loosened in the slightest degree, and deliveries were maintained with clock-like regularity.

This is the kind of service you can expect in dealing with us. Your orders will be filled on time. The work will be done up to Ergon Standards in every sense of the word and we know your experience with our motors will be just as gratifying to you as that of all our customers.

Send us your requirements and let us figure with you

Hazard Motor Mfg. Co.
Rochester, N. Y.

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Figuring It Out

It's a simple thing to figure that so many gallons of lubricating oil at so much a gallon, calls for a check of so many dollars. Easy arithmetic.

BUT—

If so many gallons at so much per gallon costs so much PLUS a repair bill because of using the wrong oil, that makes different figuring.

The engine of your car is a piece of delicate mechanism that demands a lubricant of certain virtue. ANY OLD OIL WON'T DO!

The oil you NEED is the oil that is made for your car;

That oil is

MONOGRAM

The oil that is BEST FOR YOUR ENGINE. It lubricates every second.

The man who has figured this out knows every bolt, bar and rod in your engine—the strength and expected service of these parts.

He knows

MONOGRAM

And as a Mechanical Expert prescribes this oil to the exclusion of every other lubricant.

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116 Broad Street, New York City

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Overland

$950

Completely equipped
With electric starter and generator--$1075
Prices F. O. B. Toledo

ALL raw materials cost the largest buyer less.

One of the recent monthly averages on incoming freight at the factories of the Willys-Overland Company was 85 carloads a day—over 2500 tons!

Can you grasp the economy of such purchasing power?

Is it any wonder we can buy and sell for less?

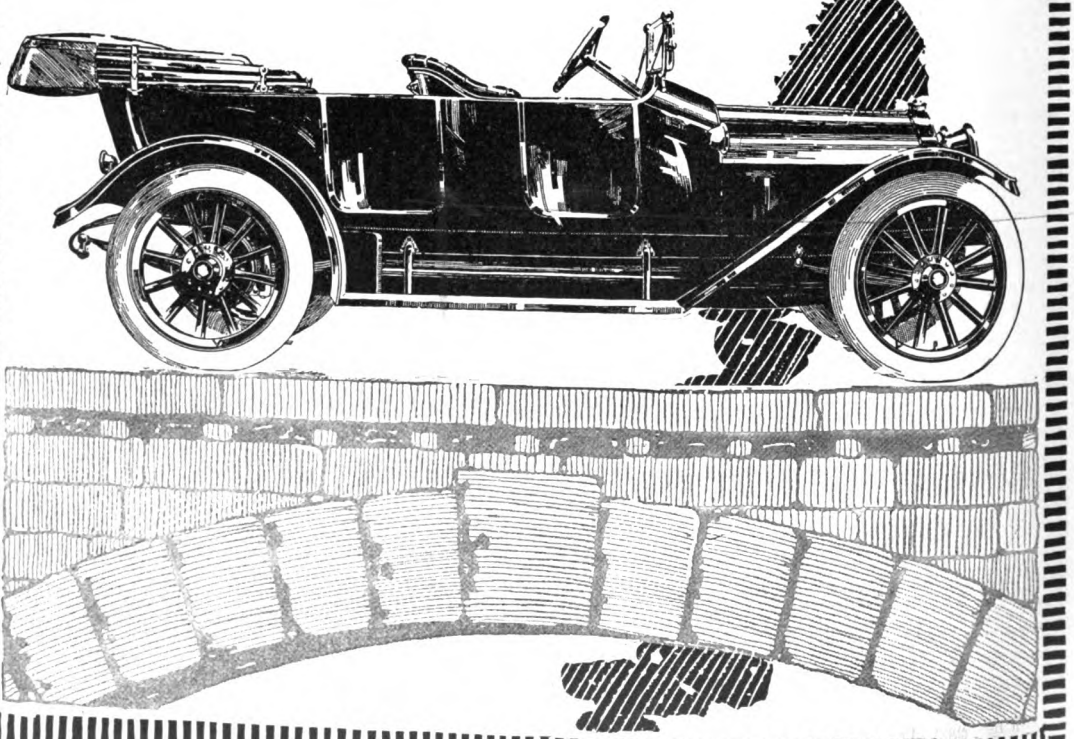
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The Willys-Overland Company, Toledo, Ohio

35 horsepower
114-inch wheelbase
Electric head, side and tail lights
Storage battery

Three-quarter floating rear axle
34 x 4 Q. D. Tires
Cowl dash
Clear vision windshield

Mohair top, curtains and boot
Stewart speedometer
Electric horn
Flush U doors with disappearing hinges



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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, November 13, 1913 No. 8

GASOLENE HAS COME DOWN! HONEST, FELLOWS, IT HAS

Price in New York Drops from 17 to 16 Cents a Gallon After 10 Months at Former Figure—Supply and Demand Logic? Maybe.

Gasolene has dropped!

For so many months the only news of this commodity has been of a bullish nature that the news that the fuel had started downward from the eminence it reached in rapid jumps is gratifying, to say the least; anyway, the price of 17 cents to the garageman, as maintained by the Standard Oil Co. of New York, was cut to 16 cents last week. Correspondingly, the company's price to the individual owner fell from 21 to 20 cents.

Whether gasolene will go lower is a Standard Oil secret, and according to previous information the big corporation will have to consult Old Supply and Demand before anything authentic can be stated. It is only fair to surmise, however, that since the Standard Oil version of past increases was based upon a falling off of the supply, coupled with an increase in the number of cars, the decrease must be attributed to an increase in the supply of "gas" and a falling off in the number of cars. But since there are more cars now than ever before, why—— But the logic's too deep.

Anyway, the story of gasolene dates back to January, 1912, when it jumped from 9 to 10 cents, and it kept on jumping about a cent a month until it got to 16 cents; then it stopped until January 2, 1913, when the trade was given a New Year's gift of another one-cent increase, making the garage price 17 cents. And there the commodity hung until last week.

Whether the hue and cry which were raised when 16 cents was touched had anything to do with the matter is not officially stated, but it is a fact that when the entire garage trade in New York formed an association and began to look for some other fuel or source of fuel the increases stopped for about six months, and since the last one it has been semi-officially stated that the next move would be down and not up.

Philadelphia Also Abandons Truck Show.

Philadelphia also has abandoned its truck week, the Philadelphia Automobile Trade Association having decided to concentrate its annual show in the one week, January 10th to 17th, and to restrict it solely to pleasure cars. The exhibition will be held in a new structure, the nine-story Metropolitan Building recently completed at Broad and Wallace streets. Louis Block, manager of the Ford branch, is chairman of the show committee.

Neracher Now Turns to Electrics.

C. A. Neracher, former chief engineer of the Willys-Overland Co., is one of the principal organizers of the Carl Electric Vehicle Co., of Toledo, which just has been incorporated under the laws of Ohio with an authorized capital of $300,000. It already has acquired the necessary machinery and is negotiating for a vacant factory in Toledo, and so soon as it is secured will immediately begin operations.

Vail to Head Maxwell's Executive Board.

J. A. Vail, for the past eight years general manager of the Fairbanks-Morse Mfg. Co., which produces gas engines in Beloit, Wis., has been elected chairman of the executive board of the $40,000,000 Maxwell Motor Co. He, of course, will come to New York to assume the duties of his new office. Vail succeeds J. C. Brady, son of the late Anthony N. Brady.

Premier Adds Half-Million to Capital.

The Premier Motor Mfg. Co., of Indianapolis, has increased its capital from $1,250,000 to $1,750,000. At a special meeting of the stockholders last week, at which this action was taken, a bond issue of $250,000 was also authorized.

MOSLER TO DOMINATE SPARK PLUG BUSINESS

Court of Appeals Reverses Court Below and Sustains Canfield Basic Patent Owned by New Yorker —Back Royalties Barred —Text of Decision.

Although the Canfield recessed spark plug patent, No. 612,701, was thrown out of court by the United States District Court for the Southern District of New York a year ago and its lack of present-day value expressed in emphatic terms, the United States Circuit Court of Appeals for the Second Circuit this week injected a full measure of life into the patent and handed down an opinion which overturned the decision of the lower tribunal and caused the entire spark plug trade to face an unexpected and perplexing situation.

The patent, owned by A. R. Mosler & Co., of New York City, maker of Spit Fire plugs, is, with its new status, claimed by its owners to cover practically every brand of plug made and marketed to-day; Mosler's attorney, W. A. Redding, is responsible for the statement that there are no less than 300 manufacturers and jobbers in the United States who will soon be called to account and asked to accord substantial recognition to the Canfield invention, the patent having two years yet to run.

Fully as important as the recognition of the patent as covering the recessed electrode principle is the fact that it was declared valid even though ten years elapsed between the date it was granted and the date suit was brought, which lapse was made the most of by the defendant. The court, however, refused to void the patent for lack of prosecution, but as a sort of penalty ruled that a loss of back royalties of any description cannot be collected. The long delay was in no way attributable to

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Mosler, who instituted suit five months after he acquired the patent, but he loses a handsome fortune by the inaction of its previous owners.

Turning backward to the history of the invention, which was conceived by Frank W. Canfield, a lumberman, and patented October 18, 1898, and which passed through several hands before it reached its present owner, those who have had to do with the matter may marvel at the seeming turn of fate which causes the patent, sold by the Association Patents Co. to Mosler for a merely nominal sum, to become so valuable a property. The Patents company, which was closely connected with the old Association of Licensed Automobile Manufacturers, had purchased the patent but apparently had little regard for its value and let it go for almost a "song," the terms of sale, however, protecting A. L. A. M. members from prosecution for infringement.

The suit was brought against John Lurie, who at the time of infringement traded as the Auto Supply Co. While he was the nominal defendant, the expense, it is understood, was borne by the Rajah Auto Supply Co., of Bloomfield, N. J., and C. A. Mezger, Inc., of New York City, who are the manufacturers of some of the plugs named as infringing.

The principle involved is that of a recess or chamber wherein the electrode or sparking gap is located; the contention of the inventor was that the placing of the spark gap in this recess in the inner end of the plug prevented the accumulation of carbon on the points and thereby eliminated a trouble which had been characteristic of previously constructed electric igniters for internal combustion engines.

His theory was recognized by the court, which said:

"That air at the bottom of a deep, narrow recess would be 'trapped,' so that there would be no circulation at the bottom when there was disturbance in the space into which the recess opened was a fact in physics well known long before there were any gas engines. That circumstance, however, would not defeat this patent, since Canfield, so far as this record discloses, was the first to point out that when a sparking device of this type was so constructed as to secure the presence of such a recess between the two electrodes, the fouling of insulation and the establishment thereby of a path for the electric current other than the one in the course of which there was spark-jump would be avoided.

"None of the various patents and publications introduced in evidence as showing the prior art have anything to say about the desirability of having such a recess between the electrodes. It is contended, however, that some of them show such a recess narrow and deep; that such a recess would necessarily act as the patentee's does because every such recess under the law of physics above referred to would trap the air at its bottom; and since the recess was there in the prior art it makes no difference that the prior inventor who placed it there did not appreciate or announce the useful function it performed."

Priority in the art had much to do with the dismissal of the bill of complaint in the lower court, but the priority was not recognized by the appel-

(Continued on page 27.)

GERBER GETS ABBOTT PLANT AND BUSINESS FOR $235,000

Detroit Company's Financial Straits Pave the Way to Acquirement by Pittsburgh Man—Old Creditors May Get 20 per Cent.

Instead of securing the plant of the bankrupt Michigan Buggy Co., for which he made several unsuccessful bids, E. F. Gerber, of Pittsburgh, has acquired the Abbott Motor Co., of Detroit, and all its property. Negotiations have been in progress since his last bid for the Michigan assets was rejected, and, although it was known that they were pending, they were supposed to be of a confidential nature that did not permit of publication.

The purchase price, $235,000, has not yet been paid, but that transaction and a few legal formalities are all that remain to consummate the deal. It was rendered more easily possible by the fact that the financial condition of the Abbott company has again taken an acute turn.

In May last, its creditors assumed charge of its affairs and elected their own officers, but two weeks ago they were again called together and it was at that time that Gerber submitted his offer.

It is estimated that with his $235,000 in hand, the creditors of record prior to March 5th last will receive 20 cents on the dollar, and that 100 cents will be paid on all claims accruing after that date.

Gerber, who was one of the heaviest creditors of the Michigan Buggy Co., handled its buggies and motor cars in a considerable portion of the East, and its failure placed him in an uncomfortable plight, both personally and so far as his sub-dealers were concerned.

Denies Lower Duty on Truck Frames.

The Board of United States General Appraisers has overruled a protest by P. C. Kuyper & Co., relating to the classification, under the tariff act of 1909, of shaped steel imported by the Saurer Motor Co. for use in building chassis frames for motor trucks. The parts were undrilled and unriveted and of pressed steel. Duty was assessed at 19/10 cents per pound under paragraph 131, as pressed steel shapes. The claim was that the material was properly dutiable at 4/10 of 1 cent per pound under paragraph 121, as structural shapes of steel, not assembled, or manufactured, or advanced beyond hammering, rolling or casting. The proof offered was to the effect that the shapes were first rolled, then pressed, sheared off and finally hammered to straighten the steel parts. The board held that the shapes are excluded from paragraph 121, as they were not made by the processes named in that paragraph, but were made substantially by pressing and shearing.

Two Receivers for Atlantic Truck.

On the application of Ralph Sanger, a vice-president, the Atlantic Vehicle Co., with offices in New York and a factory in Newark, N. J., was placed in the hands of receivers on Tuesday last, 11th inst. The Federal court in Newark, in which action was taken, appointed A. Perry Osborne, of New York, and Harry L. Davisson, of Orange, N. J., as receivers.

The company was organized about 18 months ago, with a paid up capital of $340,000, to manufacture electric trucks, of which it produced about 50. Its heaviest creditor is the New York Edison Co. Its failure is ascribed to the now common lack of working capital.

Universal and Bremer-Wilson Merged.

The Bremer-Wilson Co., of Chicago, Ill., has been merged with the Universal Mfg. Co., of Racine, Wis., of which Fred G. Bremer has become president. The transaction gives to the Bremer-Wilson people a going factory in which to produce its engine starters, locks, pliers, etc. They already had secured a factory site in Benton Harbor, Mich., and so soon as necessary details are completed the Universal company will remove to that place.

Nine More Stewart Speedometer Branches.

The Stewart-Warner Speedometer Corporation has established nine more branches in, respectively, Philadelphia, Pittsburgh, Atlanta, Kansas City, Cincinnati, St. Louis, Minneapolis, Los Angeles and Portland, bringing the total of such branches up to 17. They are separate and apart from the 53 service stations already established, which number also is to be largely increased.

Goodyear Again Pays 12 per Cent.

Setting at rest rumors which had been afloat in financial circles, the Goodyear Tire & Rubber Co., of Akron, last week declared the regular cash dividend of 12 per cent. on its common stock. During the year, and despite the effects of a fierce strike and a mighty flood, the Goodyear business increased from $26,000,000 to $33,000,000. Its shares are now quoted at about 270.

Carples Sails to Introduce American Top.

James M. Carples sailed from New York last week to introduce the Sharrer one-hand top to the European trade. It is stated that several parties are negotiating for the rights.

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WEED'S GRIP TIGHTENED BY MICHIGAN COURT'S OPINION

Perry Grip Enjoined and Weed Patentee Commended — Invention of 1869 Bowled Out in All-Sufficient Language.

Court decision upholding the Parsons patent, No. 723,299, under which Weed chains are made, have become so common as to excite little attention, but in an opinion handed down last week in the United States District Court for the Eastern District of Michigan, Southern Division, Judge Tuttle made pointed comparisons of the Weed grip and the Perry grip, which was claimed to be an infringing device.

The suit was brought by the Weed Chain Tire Grip Co. against Arthur S. Perry and Milton H. Perry, trading as the Perry Chain Grip Co., and against the Union Steel Screen Co., which made the grips for the Perrys, and against the Motor Specialty Co., the Perrys's selling agent. The court held the grip to be an open-and-shut infringement and, referring to the Thomson patent, No. 98,126, granted December 21, 1869, which was cited to prove the prior art, said:

"Thomson lived and produced ideas in an industrial period entirely different and far remote from the efforts of Parsons. It is not necessary for the court to speculate as to the extent to which Thomson might have modified his device had he lived in the period when pneumatic tires and automobiles were in practical use. His device was intended primarily to protect the wheels of the heavy, slow-moving traction engine. It would not be serviceable as a non-skidding attachment to a rapidly moving wheel. Instead of preventing skidding, it would increase it. The fact that it might creep upon the wheel has no bearing upon this case. Creeping is a law of mechanics and not the invention of any man. Parsons conceived a structure in which he could utilize this creeping of the chain fastened upon the tire of a wheel in such a way as to prevent the wheel from skidding, keep the chain from coming off the wheel, and to wear the surface of the wheel so uniformly that the durability of the entire surface of the rubber tire was utilized, and he did all of these things without slowing the tire. No one had previous-done all of these things.

"No better argument can be urged for the inefficiency of the Thomson invention for the use served by the Parsons invention than that none of the many manufacturers are willing to use the Thomson device for the purpose of preventing skidding, while on the other hand, manufacturers have found it so necessary to make skid chains like those shown by Parsons that the courts have been continually called upon to detect the ingenious schemes for infringing the Parsons patent.

The Parsons device met a great need in the way of making the modern rapidly-moving vehicle useful and safe. No earlier device met that need. Parsons's device is novel and useful and he is entitled to the protection of the law."

The Perrys produced Perry, Weeder, Peerless and Emergency grips.

Court Weary of Attacks on Weed Grip.

The United States Circuit Court of Appeals in New York City is apparently weary of listening to arguments about the Weed tire chain; it said as much this week in an opinion affirming the Weed Chain Tire Grip Co.'s victory in the lower court over the E. J. Willis Co., of New York City, which sold grips made by the Whittaker Chain Tread Co., of Boston, maker of Whitaker, Besdam and Empire grips. The court declared that if ever there was a case where everything that could be said had been said this was one and that anything that had been produced by the Whitaker-Willis interests failed to have any bearing on the validity of the patent. The decree was affirmed with costs.

Purchasing Agents' National Association.

The National Association of Purchasing Agents has been brought into being, with H. T. Leeming, of Thomas A. Edison, Inc., as temporary chairman and Elwood B. Hendricks as temporary secretary and treasurer. The organization is designed to include in its membership purchasing agents and buyers for industrial establishments of every nature, and when it is permanently welded, at a meeting which will be held late this month, the formation of sub-associations will be undertaken. Temporarily its headquarters are in Hotel McAlpin, New York.

Sumter to Make High-Tension Magneto.

Having decided to go more largely into the manufacture of magnetos, the Sumter Telephone Mfg. Co., of Sumter, S. C., has dropped "Telephone" from its title. It is preparing to bring out a line of high-tension magnetos to supplement its present instrument of the low-tension type.

Milwaukee at Odds Over Bumpers.

The Garage Equipment Mfg. Co., of Milwaukee, has filed suit in the Federal Court in that city against the Milwaukee Auto Specialty Co. charging infringement of its bumper patents. An injunction and accounting, of course, are sought.

$135,000 HIGHEST BID FOR BANKRUPT R.C.H. PROPERTY

Whole Assets Appraised at $650,000 and Acceptance of Bid to be Opposed—$25,000 Offered for $400,000 Real Estate.

One hundred and thirty-five thousand dollars was the best offer made for the property of the R. C. H. Corporation, in Detroit, at the receiver's sale on Tuesday last, 11th inst. It was tendered by four individuals and covered the plant, real estate, buildings and their contents, the four men concerned being J. F. Hartz, who assumed the R. C. H. presidency when the creditors took charge; Charles P. Sieder, secretary of the creditors' committee, and Harry S. Grant and Charles S. Beardsley, of Detroit.

It is understood, however, that the trustee, the Security Trust Co., will recommend to the court that the bid be not accepted, the assets which they seek having been appraised at $650,000.

Winternitz & Co., of Chicago, in conjunction with others, submitted bids for various parcels which totaled $134,000. Harris Bros., of Chicago, who, like Winternitz & Co., make a business of purchasing bankrupt properties, were represented and expressed a desire to make an offer but maintained that they had not had an opportunity to make an inspection and a real appraisal.

The matter will come before the court for confirmation on Monday, November 17th, at which time it is expected that Harris Bros. will have their data in hand and be able to make an intelligent bid.

Among other offers was one of $25,000 for the real estate, which is conservatively appraised at $400,000.

Van Sicklen Completes Speedometer Co.

N. H. Van Sicklen, who for many years was the owner of Motor Age and who within the past several months has been developing a speedometer under the Purdy patents, has organized the Van Sicklen Co. to market the device. He himself is president, Thomas F. Sheriman vice-president and Charles F. Van Sicklen secretary and treasurer. Operations are being carried on at 58-60 South River street, Aurora, Ill.

The speedometer itself is of radical design. It operates by the drag of an air current produced by a single-bladed fan driven by the usual flexible shaft. The rotary air current acts on a similar single blade on the indicating disk which moves against a light spring. The faster the fan rotates the stronger the air current and the greater the disk movement.

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COURT KEEPS SNUFFER ON THOSE NEVEROUT PATENTS

Rose Company Unsuccessful on Appeal from Decision Against its Bracket Patents—Lack of Patentable Invention Upheld.

The legal snuffer which Judge Cross in the United States District Court for the District of New Jersey applied last January to a Neverout lamp-bracket suit brought by the Rose Mfg. Co., of Philadelphia, Pa., was firmly fixed in place last week by the Circuit Court of Appeals for the Third Circuit, the decree of the lower court being affirmed. The defendants, who were charged with infringing four patents, were the E. A. Whitehouse Mfg. Co. and the Le Compte Mfg. Co.

What the lower court did was to declare some of the patents invalid and the others not infringed and to dismiss the bill of complaint. The Rose company endeavored to have its suit reinstated, but the Appellate Court has added an extra padlock to the door.

"The bill of complaint," stated the court, "charged that the defendants were infringing four separate and distinct letters patent—two mechanical patents and two design patents—said patents being: Rosenbluth, No. 883,973, April 7, 1908; Hughes, No. 962,220, June 21, 1901; Rosenbluth design patent No. 41,388, May 16, 1911; Rosenbluth design patent No. 41,389, May 16, 1911.

"The defendants were charged with conjointly embodying the alleged inventions of the several letters patent in the alleged infringing articles manufactured by them. Both of the mechanical patents, No. 883,973 and No. 962,220, relate to brackets arranged to support a lamp in detachable relation to a vehicle body, such as are adapted more especially for use on automobiles, to support and illuminate the number or license placed thereon.

"The design patents, No. 41,388 and No. 41,389, are stated to be for new and original ornamental Designs for Vehicular Number-Plate Supports. The decree of the court below holds that claims 7, 8 and 10, the only ones involved in patent No. 883,973, were not infringed by the defendants; that claims 5 and 6 of patent No. 962,220 are invalid, because of the absence of patentable invention in their subject matter, and that the design letters patent are for mechanical and functional features, and not ornamental and therefore invalid.

"A careful consideration of the patents in suit, of the record before us, and of the elaborate oral and printed arguments submitted by counsel on both sides, satisfies us that there was no error in the decree of the court below, and the clear and convincing opinion of Judge Cross relieves us of the necessity of restating the grounds for that decree. The decree of the court below is therefore affirmed."

U. S. Rubber Again Increases Capital.

For the purpose of "repaying the recent outlays for enlargement of plant and for expenditures on the plantations in Sumatra," the United States Rubber Co., which owns the United States Tire Co., on Thursday last added $9,422,000 to its preferred stock. Each stockholder will be allowed to subscribe for one share of the new stock at par for every 10 shares already held. This procedure is designed to prevent the expense of underwriting the new issue. Despite the opportunity offered stockholders and other investors, the new issue failed to affect the market favorably, as had been expected. On Thursday, when the directors took action, U. S. Rubber preferred sold at 104; the following day it dropped to 100¼.

Republic Possessed of New York Branch.

The Republic Rubber Co., of Youngstown, O., has taken over the Republic Rubber Co. of New York, heretofore owned and managed by New York men. F. G. Hill, secretary and sales manager of the old company, will, however, remain in the same capacity with the new organization, having charge of all tire service. C. W. Hardin, former Eastern manager of the parent company, has been elected vice-president and treasurer of the New York company and will handle its mechanical sales. The old location at 229 West 58th street will be retained.

Uncle Sam Grants Studebaker a Drawback.

A drawback allowance has been granted by the Treasury Department on the exportation of automobiles designated as model 6, manufactured by the Studebaker Corporation, with the use of aluminum parts made from castings manufactured from imported aluminum by the General Aluminum & Brass Castings Co., of Detroit. The drawback also applies to such aluminum parts when exported either separately or in connection with other parts of model 6 automobiles.

Detroit Factory for Graton & Knight.

The Graton & Knight Mfg. Co., the old established leather goods house in Worcester, Mass., has established a branch factory in Detroit. It is in charge of C. F. Urquhart and is located in what was formerly the Wayne Belting Co.'s plant on Second avenue.

CUTTING FORD PRICES IS MADE CONTEMPT OF COURT

Officers of Dayton Concern Try to Explain How They Weren't Doing Wrong—Judge Rebukes Belligerent Lawyers.

After a warm legal battle, Lucien Soward and O. D. Noble, attorney and sales manager, respectively, of the Union Motor Sales Co., of Dayton, O., were adjudged guilty of contempt by Judge Hollister in the Federal court in Cincinnati on Saturday last, 8th inst. Their contempt consisted of violation of an injunction obtained by the Ford Motor Co., of Detroit, in June of last year restraining the Motor Sales company and all connected therewith from cutting the price of Ford cars.

The Dayton concern is one of the cooperative sort which, in return for the purchase of $10 shares, promises automobiles and accessories at cut rates. When the Ford people discovered that they were offering their cars at less than list, they sued for infringement of patents and for $50,000 damages, the court granting a preliminary injunction.

Later, Soward and Noble were discovered pursuing the old practices and were promptly charged with contempt. In their defense they set up that they were acting independently and also alleged that if any contempt had been committed it was due to Ford efforts to trap them.

There were so many angry passages between the attorneys at last Saturday's hearing that Judge Hollister finally called a halt and declared that he would adjourn the court unless they ceased. Explanations and apologies followed, and finally the court found both guilty of contempt.

Allen Given Decree Against Niagra.

Modifying "a patented device to a point where it merely works badly" does not avoid infringement, was the opinion of Judge Hand, of the United States District Court for the Southern District of New York, this week, in holding that the Niagra Auto Cover Co., of New York City, had infringed the Nathan tire cover patent, owned by the Allen Auto Specialty Co., also of New York City. The patent is No. 799,662 and was granted September 19, 1905. It covers a case which protects a tire in its position on the running board of a car. The Niagra device, the court held, had been accomplished virtually by making a Nathan case with a different relation of practically the same parts. Judge Hand held that it made no difference whether the cover was put on "hind side front or the normal way."

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The Week's Incorporations

Clintwood, Va.—Clintwood Motor Co., under Virginia laws; authorized capital, $10,000. Corporators—B. D. French and others.

Cincinnati, O.—Warner Auto Top Co., under Ohio laws; authorized capital, $40,000. Corporators—W. W. Warner, W. W. Dill and F. A. Brown.

Seattle, Wash.—Clark Motor Co., under Washington laws; authorized capital, $10,000. Corporators—E. T. Clark, Grace M. Clark and E. L. Skeel.

Detroit, Mich.—Scripp-Booth Cyclecar Co., under Michigan laws; authorized capital, $50,000. Corporators—Wm. E. Scripp, George G. Booth and others.

Chicago, Ill.—Abbott Garage & Machine Co., under Illinois laws; authorized capital, $3,000. Corporators—J. C. Abbott, M. E. Boynton and Harry L. Hudson.

Wapakoneta, O.—Breese Motor Plow Co., under Ohio laws; authorized capital, $100,000. Corporators—Robert A. Breese, G. D. Norris and David Lerbach.

Louisville, Ky.—Flannelly-Clarkson Auto Co., under Kentucky laws; authorized capital, $2,250. Corporators—M. H. Flannelly, E. J. Clarkson and Charles Clarkson.

Cleveland, O.—DeForrest Electric Welding Co., under Ohio laws; authorized capital, $5,000. Corporators—R. J. Lamb, M. M. McLaughlin, C. F. Miser and others.

Houston, Tex.—Sprong-Roberts Auto Co., under Texas laws; authorized capital, $15,000. Corporators—W. H. Sprong, F. S. Roberts and L. Thomas, all of Houston.

Chicago, Ill.—South Chicago Garage, under Illinois laws; authorized capital, $2,500; to operate a garage. Corporators—Fred Poulecke, Fred M. Koch and Adam Poulecke.

Montreal, Can.—Michelin Tire Co., under Canadian laws; authorized capital, $40,000; to manufacture rubber tires. Corporators—A. E. Woodworth, A. B. Wright and others.

Valparaiso, Ind.—Wheeler-Elam Co., under Indiana laws; authorized capital, $10,000; to sell motor cars. Corporators—W. G. Elam, R. W. Elam, R. S. Wheeler and others.

Washington, D. C.—Taximeter Register Co., under Delaware laws; authorized capital, $300,000. Corporators—C. E. Miller, A. R. Serven and G. S. Maxwell, all of Washington.

Philadelphia, Pa.—Albertson Co., under Delaware laws; authorized capital, $25,000; to manufacture and deal in motor cars. Corporators—George H. B. Martin, Camden, N. J., and others.

Windsor, Can.—Parsons Motor Car Co., under Canadian laws; authorized capital, $500,000; to manufacture motor vehicles. Corporators—Thomas G. Ellis, A. J. Denomy and others.

Memphis, Tenn.—Memphis Overland Co., under Tennessee laws; authorized capital, $5,000. Corporators—T. H. Smart, F. D. Graham, Roy Moyston, Earl King and Caruthers Ewing.

Dayton, O.—Public Motor Car Co., under Ohio laws; authorized capital, $10,000; to deal in motor vehicles. Corporators—H. H. Willamson, G. E. Booth, Brice Welsh and M. Kewen.

Wichita, Kan.—Jones Auto Exchange, under Kansas laws; authorized capital, $100,000. Corporators—J. J. and Laura N. Jones, A. J. Coombs, C. P. Reser and F. C. Adams, all of Wichita.

Racine, Wis.—L. P. C. Motor Co., under Wisconsin laws; authorized capital, $250,000; to manufacture motor cars. Corporators—William Mitchell Lewis, Rene M. Petard and Elbert B. Hand.

Toronto, Can.—Gray Pneumatic System, Ltd., under Canadian laws; authorized capital, $500,000; to manufacture accessories for motor cars. Corporators—J. M. Duff, Frank Regan and others.

Brooklyn, N. Y.—Crescent Taxicab Co., under New York laws; authorized capital, $5,000. Corporators—Isaac Stone, 1951 83rd street; John B. Haff and Mary L. Haff, both of 331 13th street.

Chicago, Ill.—C. A. Martin Mfg. Co., under Illinois laws; authorized capital, $2,000; to manufacture and sell motor vehicles. Corporators—C. A. Martin, George T. Glover and William Schulze.

Cleveland, O.—Kemco Electric Mfg. Co., under Ohio laws; authorized capital, $100,000; to manufacture electric specialties. Corporators—W. I. Knight, C. G. Roads, Herbert Mathews and others.

Louisville, Ky.—Auto Tire Brokerage Co., under Kentucky laws; authorized capital, $5,000; to buy and sell motor cars and tires. Corporators—Allen L. McCormick, Charles L. Holden and S. Barry.

Buffalo, N. Y.—F. H. Chace Co., under New York laws; authorized capital, $5,000; to engage in the motor car business. Corporators—Frank H. Chace, Daniel Walker and Henry A. Thayer, all of Buffalo.

Greenville, Ill.—Auto Supply & Sales Co., under Illinois laws; authorized capital, $2,500; to deal in motor cars and operate a garage. Corporators—Edward De Moulin, Elvin W. Miller and Clarence E. Holles.

Cleveland, O.—Cleveland Presto-Ceal Co., under Ohio laws; authorized capital, $10,000; to deal in motor car accessories. Corporators—C. F. Schultz, M. E. Schultz, C. S. Bechberger, F. A. Follier and H. U. Krauss.

Bristol, Conn.—Auto Service Co., under Connecticut laws; authorized capital, $10,000; to conduct a real estate and mechanical business. Corporators—I. E. Pierce, W. H. Arnold, J. H. Hayes and Charles Parker.

Bridgeport, Conn.—New England Auto Supply Co., under Connecticut laws; authorized capital, $10,000; to deal in motor car supplies. Corporators—Andrew B. Hicks, George D. Molones and Daniel A. Stanton.

New York, N. Y.—Charles E. Riess & Co., under New York laws; authorized capital, $50,000; to deal in motor cars, etc. Corporators—Charles E. Riess, George L. Reiss and Byron H. Riess, all of Cumberland Hotel.

New York, N. Y.—Modern Garage Co., under New York laws; authorized capital, $10,000. Corporators—Thomas Black, 2075 Eighth avenue; Henry W. Biggs, 201 West 106th street; Carl S. Flanders, 129 Columbia Heights, Brooklyn.

East Rochester, N. Y.—Housel Mfg. Co., under New York laws; authorized capital $25,000; to deal in motor cars, etc. Corporators—William H. Cole, Pittsford, N. Y.; William E. Housel and Bernice B. Housel, both of 1 Cornell street.

Buffalo, N. Y.—Houk Mfg. Co., under New York laws; authorized capital, $900,000; to manufacture motor cars, etc. Corporators—George W. Houk, The Drexel, Overbrook, Pa.; Edward McMills, 147 North street; Charles H. McCullough, Jr., 68 Irving place.

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POPE RECEIVERSHIP UP IN TWO NEIGHBORING STATES

George Pope Alone Sufficient in Connecticut but Co-receiver Named in Massachusetts—Boston Stockholders Insistent.

Efforts of the Massachusetts stockholders' protective committee and the Massachusetts bankers' committee to secure the appointment of co-receivers for the Pope Mfg. Co., of Hartford, Conn., and Westfield, Mass., met with different results in the two States.

While Judge Tuttle, of the Connecticut superior court, considers that at this time the temporary receiver, Colonel George Pope, is sufficient, Judge Aldrich, of the Federal court in Boston, took an opposite view and named Colonel Pope and Charles A. Morse, a Boston banker, co-receivers. Judge Tuttle, who rendered his decision on Friday last, 7th inst., stated that the motion for co-receivers could be renewed on December 5th, when the confirmation of Colonel Pope as permanent receiver will come up.

The Boston stockholders' committee is said to represent 29,044 shares of the 58,000 that are outstanding. The Pope family holdings are 11,000 shares.

In appointing Morse co-receiver, Judge Aldrich, who took action yesterday, 12th inst., stated that he did so without prejudice to the subsequent appointment of a third person.

Each of the Massachusetts committees, through their counsel, went to Hartford prepared to urge the appointment of certain men as co-receivers, the stockholders having selected Frank J. Tyler, one-time manager of the Maxwell branch in Boston, while the bankers, whose claims amount approximately to $800,000, favored Charles M. Morse, also of Boston. There was talk of extravagance in Pope affairs, but while they expressed faith in Col. Pope's integrity, they believed the appointment of co-receivers would serve the best interests of all.

The merchandise creditors' committee, of which Clarence E. Whitney is chairman and whose claims amount to about $300,000, was also represented and stated that if the other interests are to have separate receivers the merchandise creditors likewise would ask for one. Counsel for the merchandise creditors, however, suggested that it would be well to "wait and see how Col. Pope gets along."

Judge Tuttle, who sat as a magistrate, as stated, took this view; he also named Frederick C. Billings and John R. Hills to appraise the Pope property in Connecticut.

Meanwhile, another stockholders' committee has been found and, like the others, is seeking proxies. This committee is made up of Roy T. Barnes, Robert M. Brewster and Frederick F. Small, all of Hartford, Small being one of the stockholders who joined in the original application for the receivership. Unlike the Massachusetts committees, however, this trio is not unfriendly to the Pope interests and there are those who predict that a sharp conflict between the Massachusetts and Connecticut interests will result.

Walpole Figures Run into Millions.

According to the report of the co-receivers of the Walpole Tire & Rubber Co., of Walpole, Mass., of which they took possession on August 2nd, the assets on that date amounted to $3,52,301.58 and the liabilities to $4,539,507.28.

In the assets, however, patents, trade marks and good-will are carried at a valuation of $841,998.05, and in addition there is stock in subsidiary companies to the value of $500,000, and also 50 shares of United States Worsted second preferred and 104 shares of Westinghouse common which were taken in settlement of trade accounts and which are listed at $5,490. Likewise there are contingent assets in the form of notes receivable, discounted or assigned, to the amount of $276,678.67. The Walpole real estate, machinery and equipment is valued at $949,514.37, which with the inventory, $628,295.70, constitute the most tangible assets, although although in addition there are accounts receivable to the value of $232,537.56.

Of the liabilities, $3,252,233.33 is represented by capital stock, $671,933.52 by notes and $173,577.99 by accounts receivable. These latter items figure as current liabilities, but in addition there are contingent liabilities made up of notes receivable to the value of $276,678.67 and offsetting a similar item in the asset column.

Bernard Morgan Encounters a Snag.

Ever since Bernard Morgan, of Newport, R. I., informed his British brethren that he thought he could get jobs in America for a lot of them he has been more or less in the limelight or the courts—mostly in the courts. He has brought some patent infringement suits himself, but the latest in which he figures has resulted in an injunction against him. It was brought in the United States District Court for the District of Rhode Island by Louis Schwab as surviving partner of the firm of Stevens & Co. and alleged that Morgan infringed the Bryant valve spring remover patent, No. 1,008,604, which was granted November 14, 1911.

SOME DETAILS OF MERGER OF SAURER AND MACK COME OUT

Discrepancy of Nearly $600,000 Between Original Appraisals—Mortgage Loan of $1,200,000 Still Rests With Court.

Contrary to expectations, Judge Garretson, who sits in the New York Supreme Court in Brooklyn, has not yet rendered the decision which will permit the International Motor Co. to place the mortgage of $1,200,000 on its property which for several weeks has been blocked by a temporary injunction secured by minority stockholders. Judge Garretson has been ill but, nevertheless, has been considering the case at his home, to which he carried all of the many documents pertaining to the matter.

The number has been increased by the filing of original reports of the appraisals made of the assets of the Mack Bros. Motor Co. and those of the Saurer Motor Co., out of the merger of which grew the International company itself. They include the deposition of W. L. Case, who appraised the two properties for the North American Audit Co., and also the report of Ernst & Ernst. The latter statement showed that the Saurer property had a net worth, exclusive of patents, good-will, and capital stock, of $538,992, whereas the other auditing concern figured the actual net assets at $4,523. Of the discrepancy between the two estimates, $281,875, concerned the question whether the royalties payable under the Otto patents of the Saurer company should be classed as a liability. The case hinges partly on this point, i. e., whether a deferred charge is a liability.

The Ernst & Ernst report showed a deficit of $61,008 under the guaranteed total upon which the merger was based, while the North American statement disclosed a deficit of $595,477.

Judge Garretson is now expected to give a decision before the end of this week.

Haynes Names More District Managers.

The Haynes Automobile Co., Kokomo, Ind., has still further enlarged its staff of district managers by adding to it three more experienced automobile men. They are F. C. Burnett, who will have headquarters in Minneapolis; F. A. Fisher, who will handle Eastern Canada, with offices in Toronto, and J. S. Stark, who will be stationed in Elkhart, Ind. Previously Burnett was general manager of the Peckham Motor Car Co., of Dayton, O.; Fisher was identified with the Stutz car in Canada, and Stark was connected with the Michigan Buggy Co.

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In the RETAIL WORLD

The Bockelman Garage has been opened in Beecher, Ill.

Stafford Bros. have purchased the Huber Garage in Courtland, Kan.

The Early Auto Co., of Ida Grove, Ia., has sold its business to Rosenhauer & Eckerman.

W. A. McCollum has entered the trade in Des Moines, Ia., at 208 11th street; he has the Colby agency.

The Olathe Auto Co., of Olathe, Kan., has taken over the Trail Garage: it formerly was operated by Lewis Edwards.

William Radeleff and Orval Marklos have formed a partnership in Springville, Cal. They will operate a repair-shop.

W. R. Poffenbarger, of Bussey, Ia., has sold the Bussey Garage to Ken Verips, formerly of Knoxville, in the same State.

W. T. Keys, of Algona, Ia., has sold the Kossuth Motor Car Co. to Paul Clement, formerly of La Porte City, in the same State.

The Henry Swensgaard Sales Co., of Detroit, has "gone into" cyclecars; it has the Dayton cyclecar agency for Michigan, Ohio and Indiana.

The Onondaga Motor Co. has been formed in Syracuse, N. Y., to distribute Hupmobiles; it is a subsidiary of the Chalmers-Syracuse Co.

W. P. Durst is about to dispose of his garage and agency in Greenwood, S. C. He will establish a Ford agency in Elberton, in the same State.

County Supervisor Olof Pearson, of Swea City, Ia., has disposed of his garage to J. L. Vaux; the latter has leased it to C. G. Dourte, who will operate it.

G. H. Crosby has purchased the interest of his partner in the Crosby & Morse Garage in Pomona, Cal. He has changed the style to Main Street Garage.

A new garage is being erected in Warehouse Point, Conn., on Main street; when completed it will be operated by Ralph Merriman and Dugan Blaney.

J. S. Morrison, of Phoenix, Ariz., has sold his agency to his brother, E. C. Morrison, and F. B. Huffer; J. S. Morrison will conduct a wholesale business only.

Joseph Foreman has purchased the half interest of C. M. Bennett in the Westfield (Ill.) Garage; Bennett will engage in business with his brother, C. E. Bennett.

R. F. Fisher and O. F. Wilson have entered the trade in Columbus, O., as dealers in Dart trucks; they have secured salesrooms in the High-Seventh Garage.

Thurl Young and Otis Winget have opened a garage in Enon, O. It is the first garage in this vicinity, transient and local trade heretofore going to Springfield.

Claude Redwine, formerly of Watsonville, Cal., has purchased the garage of W. A. Platt in Mountain View, in the same State; he assumed immediate possession.

The F. X. Laturbur Co., of Sidney, O., has sold its garage and business to Charles McClure and Walter E. Brookey; the latter will operate as the McClure & Brookey Garage.

C. M. Aurand, of Rockford, Ill., has purchased of Augustus Michell a two-story building which is nearing completion and will open a garage. The building cost Aurand $6,500.

Koons & Burk, operators of the Centaur Garage in Wausau, Wis., have dissolved partnership; C. E. Burk retires from the business, which will be continued by J. A. Koons.

Eugene Avery, formerly connected with the Auto Sales Co. in Lansing, Mich., has taken over the Globe Garage in Kalamazoo; he will remove to the latter city and operate the garage.

Leonard Wikoff, formerly with the Galesburg (Ill.) Machine Works, has entered the trade for himself; he has purchased and is operating the Crane & Kennedy Garage, in Oneida, in the same State.

The garage of the Johnson Auto Co., in Marshalltown, Ia., has been taken over by M. Hurto, of the Hurto & Berggren Machine Shop; the Johnson establishment is located at 8 South 2d street.

The Overland Automobile Co., of Houston, Tex., has changed its name to Sprong-Roberts Automobile Co. F. S. Roberts is president, W. H. Sprong vice-president and L. D. Thomas secretary-treasurer.

The Props-Brooker Motor Co., of Muncie, Ind., has purchased the Muncie Garage, on South Walnut street, and will remove to that location; the company was located on North Mulberry street.

Vautrot Bros., of Durand, Wis., have sold their hardware and implement business to John Weishapple and will devote their energies to their garage and agencies; they handle Ford, Buick and Cadillac cars.

A. C. Velton & Son, formerly of Detroit, contemplate opening a garage in La Crosse, Wis. They have leased and are remodeling a building formerly utilized by the Tomah Mfg. Co. It is located on Superior street.

R. L. Brewster has opened a service and repair station in Des Moines, Ia., at 916 Walnut street; for the past two and one-half years he has been foreman of the service department of the Independent Auto Co.

H. S. Goembel, who operated a garage in Geneseo, Ill., on East Orange street, has sold out to Lyon & Gernant; the latter have moved their business from the Zimmerman Mill building to Goembel's location.

Baker & Hamilton, hardware dealers in San Francisco, have taken up tires; they have been made Savage distributers in Northern California. The company is one of the oldest hardware concerns in San Francisco.

Archie Minck, formerly manager of the Joseph Garage, in Columbus, O., has taken it over and is operating it under the style Champion Garage; he also has a taxicab service. His garage is located at Champion avenue and Oak street.

Charles Franzen and V. R. Eads, who have been employed as mechanics in St. Joseph, Mo., have entered the trade for themselves; they have formed the Franzen-Eads Automobile Co. and have located at 109-11 Felix street.

Huse & Heigenthal, of Burlington, Wis., has been dissolved; J. S. Heigenthal will continue the business, which includes the Ford agency. The territory, however, has been divided, part having been taken by the Agner Auto Co., of Burlington.

Roeske & Sindt, Ford dealers in Davenport, Ia., have dissolved partnership; A. E. Sindt has retired from the business, which will be continued by W. E. Roeske under the style The Ford Garage. The location is at 4th and Ripley streets.

A. E. Kirk has purchased the interest of E. C. Aspey in the Hutchinson (Kan.) Mo-

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tor Car Co. and is now sole owner; the company handles Hudsons and does an extensive tire business, handling $200,000 worth of tires during the past year.

John L. Galster and Owen McMahon, who operated in Petoskey, Mich., as the Northern Auto Co., have dissolved partnership; McMahon retains the automobile business and Galster assumes ownership of two stores which formerly were the property of the partnership.

The Schaible & Weidman Auto Co., of Yysilanti, Mich., has been dissolved; Emanuel G. Weidman has purchased the interest of his partner, Theodore Schaible, and will continue the business under the style Weidman Auto Co. The concern took possession of a new garage in February.

J. M. Frederick, who is interested in the Frederick Auto Co., of Elkhart, Ia., and who until recently was connected with the Holtzmann Sales Co. in Des Moines, has opened a garage and agency in the latter city; he has secured the location on Walnut street formerly occupied by A. D. Bothne and will distribute Regals in Central Iowa.

The Lucia Motor Co., of Green Bay, Wis., Chalmers distributer, has sold its garage and agency in Oconto, Wis., to Cophus Nelson; Nelson had been connected with the company's repair department in Green Bay for three years. William Lucia, who formerly managed the Oconto branch, has returned to Green Bay, where he will manage the sales work of that establishment.

E. A. Spinner, of Milwaukee, and Peter J. Wolf and William Evans, of Menominee Falls, Wis., have entered the trade in Waukesha; they have the Ford agency for six townships and will locate on South street in Waukesha. Evans and Wolf formerly were connected with the Wittlin Auto Co. in Menominee Falls and Spinner formerly was employed by the Ford state agency in Milwaukee.

Recent Losses by Fire.

Scranton, Pa.—J. F. Peck, Brown avenue; garage damaged. Loss, $3,000.

Goodrich, N. D.—Haas & Engel; garage and machine shop destroyed. Loss not stated.

Racine, Wis.—Racine Metal Stamping Co.; explosion and fire; plant destroyed. Loss, $25,000.

Los Angeles, Cal.—Security Motor Co., 1120 South Main street; building damaged and 12 cars destroyed. Loss, $15,000.

New York, N. Y.—Yorkville Garage, 113 East 77th street, Samuel Kronenburg and Charles Weis, owners; garage damaged. Loss, $5,000.

3,941 HOURS OF LABOR ON McMURTRY'S REPAIR BILL

And McMurtry Wants to Know What the Machinist Was Doing All that Time—Demands Particulars in Healey's Suit.

"Machinists' time, 1,500¼ hours, at 75 cents an hour—$1,125.19."

This is one of a collection of items which Charles W. McMurtry objects to in a bill for $3.761.72 presented to him by Healey & Co., body builders and automobile dealers in New York City; he says it may be all right, and if it is he may be willing to pay it, but in a suit which has been filed against him by Healey & Co. in the Supreme Court for New York county he demands that he be told what the machinist was doing all that time. He has been granted an order for a bill of particulars.

The dispute stands as an excellent example of what Motor World has recommended, which is that the repairman itemize his charges in order that there may be no misunderstanding. McMurtry, who had a Mercedes car overhauled in 1912, states that a total of 3,941 hours of labor that was charged up to him constitutes 437 nine-hour days, which is nearly a year and a half of work days, and even if this does represent several men working at the same time he demands light on the subject.

Other of the items to which exception are taken are such as "Blacksmith's and helper's time, 48½ hours, at $3 an hour—$145.50; superintendent's time, 34 hours, at $2 an hour—$68; machinist's time, 627¼ hours, at 75 cents an hour—$470.44; welding and filling up two levers, $6.75; welding one brass part, $3.37; welding frame, $10.80; and making new manifold, $29.60. McMurtry sets up a counterclaim of $800 and wants to call it even, inasmuch as he paid $959.76 on the original bill, which was $4.721.41.

He turned the car over for repairs in November, 1911, and in June, 1912, received it, he states, with the good news that it was "as good as new." He submits affidavits of repair-shop proprietors who state that automobile parts are well known by individual names and that it ought to be possible for any repair-man to specify on what part labor had been performed and that many repair-shops so itemize their bills.

Minor Business Troubles.

Walter C. and Harry N. Allen, who traded in New York City as the Metallurgique Mitor Co. and who failed last spring, were discharged from bankruptcy this week in the Federal court in New York City; their liabilities were $67,928 and their assets $8,070. Besides handling Metallurgique cars, they also represented the ill-starred Michigan line.

A petition in bankruptcy was filed this week in the Federal Court in New York City against the United Auto Supply Co., of 88 Chambers street; the petitioners and their claims are: Meyer Reader, note, $400; J. H. Faw, goods, $270.83; Julius King Optical Co., $102. It is alleged that the company transferred part of its assets in an attempt to defraud its creditors.

Joseph J. Brunner, a garage owner, of 1446 South Wabash avenue, Chicago, is the object of a petition in bankruptcy filed by Fred Brill, of Chicago, Earl W. Conrad, of Warsaw, Ind., and Edward D. McCullough, of Peoria, Ill. It is alleged that his debts exceed $10,000 and that his assets are not more than $4,000.

R. Frank Bell, who traded in Tuscaloosa, Ala., as the Oak City Garage, has filed a petition in bankruptcy; his assets are valued at $2,300 and his liabilities at $1,907.28.

B. F. Baldon, who operated a garage in Quincy, Ill., at 422-24 Jersey street, has been declared a bankrupt on a petition filed by himself; the liabilities are valued at $2,190.67 and the assets at $3,485.20. The garage has been closed for several weeks and the owner of the building states that he has no knowledge of the whereabouts of Baldon.

The Rapid Motor Transit Co., which started a 'bus service on the North Side in Indianapolis in November, 1911, was thrown into the hands of a receiver last week; the liabilities aggregate about $5,700 and the bills receivable about $1,200. The application was made by James T. Eaglesfield, a stockholder, who states that of the $150,000 capital stock only $35,500 was paid in. The owners favor a winding up of the business. Following the receivership, the court ordered that the fare be raised from five to 10 cents, a move which, if the earnings are any indication, might well have been made long ago. It was anticipated by the owners that service would be terminated upon the naming of the receiver, but the court ordered the 'buses kept running during the recent street car strike.

Stearns Replevins Chalmers Limousine.

An order for the replevin of a 1910 Chalmers limousine has been granted in the Supreme Court for New York county to the F. B. Stearns Co. in a suit against the Auto Owners' Sales Co., of 317 West 59th street; the Stearns company claims possession of the car. The Sales company alleges that the Stearns company sold the car to the Crescent Tire Co., that the latter sold it to another party, and that the car is in the possession of the Sales company on storage

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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ACCESSIBILITY OF BOLTS AND NUTS.

It goes without saying that manufacturers and designers of automobiles are far more concerned with the problem of producing machines that will run well than with questions concerning repairs and renewals; yet there is a great opportunity for the builder to make things easier for the repairman without greatly increasing his own trouble and expense, by so building as to facilitate getting at parts for repair work.

It has become almost an axiom that actual repair work is less troublesome and time-consuming than the preliminary tearing down and the subsequent putting together; and in the case of the man who does his own repair work and does not have at hand all the conveniences of the repair shop the conditions often are extremely difficult. For instance, there is the common custom of making little recesses for bolt-heads and nuts. The intention doubtless is to keep the projections below the general surface and so produce a clean general appearance; but almost invariably the recesses are so restricted that a wrench is used only with the greatest difficulty, and often a nut that, in a slightly larger space, could be easily removed with an ordinary wrench must be turned with some special appliance. There are not a few live rear axles that have to be entirely dismantled in the event of a shaft breaking or a key shearing off or a differential pinion or gear stripping. Examples might be multiplied almost indefinitely and any repair man can do the multiplying.

Any amateur who has spent hours wrestling with such jobs can give at least a few pointers to many a designer. It is far better to put a nut out in the open, so to speak, when it can be done, than to sink it in a depression, for if it does catch a little dust it is easily cleaned off, and anyway the depression catches more dust, though it does not show so much. As for appearance, in most cases any one who has had mechanical trouble would infinitely prefer the slightly less neat appearance of exposed bolt heads to the struggle with sunken heads. And as for live axle trouble, it is doubtful if anyone who knows would hesitate for an instant before paying the comparatively slight extra cost of a construction that would permit easy access to parts that might break. And it does not by any means follow that accessible parts are more likely to break than those that are buried almost beyond digging out.

Naturally, it is distasteful to makers to look forward to the possibility of repairs having to be made, and even more distasteful to salesmen to broach such a subject to prospects—in fact, the matter is one to be handled with the keenest judgment. But a car that is more than ordinarily accessible in parts most likely to need attention has an advantage that will do its own talking on occasion, while the trouble-making car produces just as strong an impression of an unfavorable kind.

USED CARS THAT ARE RARELY CONSIDERED.

The extent to which officers and department heads are justified in making use of corporation property long has been a moot point and probably will remain one.

So far as the automobile industry is concerned, the point has been sharpened by some of the recent failures which have occurred. A motor car usually represents a handsome valuation, and when many of them are used by officers or employes they quickly run into large sums, how large has been brought home to creditors of some of the recently embarrassed car manufacturers.

In at least one instance, it is stated that nearly 30 cars were in such use. At list prices, they represented nearly $75,000. but even this figure did not represent the true state of affairs, as each year not only had new models been utilized but the cost of upkeep had been charged against each of them, and when at the close of each season they were turned back for overhauling and sale they represented merely greatly depreciated used cars.

While but one instance is cited, the practice is too general for it to stand as an isolated case, and if put into dollars and cents, and covering a period of years, it cannot but represent a sum that, if not staggering, is at least impressive. It is a used car situation that is altogether too rarely considered.

When all goes well, it counts for little; when all goes wrong, it counts for much—so much that car makers who have not felt financial pinch well may pause long enough to count the cost and to discover whether a remedy is possible.

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*Indicates Sanction by A. A. A.

Nov. 17, 18, 19, Boston, Mass.—Electric Motor Car Club's Electric Vehicle Salon in the Copley-Plaza Hotel.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Dec. 3-4-5, New York City—Motor Dealers' Contest Association's 500-mile reliability contest.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan. 17-24, Pittsburgh, Pa.—Automobile Dealers' Association's annual show.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Association's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

Agricultural Engineers Motor Session.

At the seventh annual convention of the American Society of Agricultural Engineers, which is scheduled to be held in the Great Northern Hotel in Chicago, Ill., December 29-31, a part of the program is to consist of papers and discussion bearing on motor farm apparatus. Tuesday afternoon, December 30th, will be devoted to such subjects and has been designated a "Motor Contest Session." In addition to reports of the committees on rules for motor contests and on a proposed motor contest in the United States, two papers will be read. One is by C. J. Rohrer of the General Electric Co., of Schenectady, N. Y., and is entitled "Small Motor Applications for Farm Work," and the other is entitled "The Five Winnipeg Motor Contests and the Lessons to be Drawn from Them."

Electric Vehicle "Salon" for Boston.

Bostonians are preparing for a brand new kind of an automobile show. It is, to be brief, an "Electric Vehicle Salon" and, as the name implies, it will include only those types of vehicles that can trace their ancestry right away back to old Ben Franklin's famous kite. It is to be held in the grand ball room of the Copley-Plaza hotel in the Back Bay section of the city and will hold the boards, or, rather, the waxed floor, from Monday, 17th inst., until Wednesday, 19th inst.

Already no fewer than 11 electric vehicle dealers have signed up for space, and the Electric Motor Car Club, which has the affair in hand, is confident that others, too, will "come in." The dealers who have been allotted exhibition spaces and the cars they will show are as follows: S. R. Bailey & Co., Bailey; Frank M. Phelps, Baker; W. L. Russell Co., Buffalo; J. W. Emery, Church-Field; Imperial Motor Car Co., Columbus; Anderson Electric Car Co., of Boston, Detroit; D. C. Tiffany Co., Ohio; Peerless Motor Car Co., Rauch & Lang; W. H. Stevens, Standard; J. W. Bowman Co., Waverley; Whitten-Gilmore Co., Woods. A space at the end of the room will be devoted to eight battery makers.

British Makers Report Good Profits.

The balance sheets of automobile manufacturing concerns on the "other side," which are being published following the ending of the fiscal years of the various concerns, serve to afford a good idea of the extent of the business done, from a financial point of view. Among others, the Sunbeam Motor Car Co., with a capital of $600,000, made a net profit of $474,545. Rudge-Whitworth, Ltd., made $102,915, which is $22,580 less than the previous year. The Rover Co., which builds motor cycles and a 12-horsepower car selling for $1,750, shows a net profit of $588,120, which is almost as much as the total earnings of the company for the previous 10 years, and out of which a dividend of 40 per cent. was paid. The Birmingham Small Arms Co., makers of the B. S. A. car and which also produces bicycles and firearms, earned no less than $937,605, which is more than was earned in any previous year except 1911, when the amount reached the large figure of $1,164,090. The earnings of the Singer Co., though but $45,820, were $33,590 in excess of the earnings of the previous year.

Detroit S. A. E. Discusses Electric Shift.

What may be termed "an electric gear shifting evening" constituted the regular November meeting of the Detroit Section of the Society of Automobile Engineers, three papers on the subject being presented. The principal paper of the evening was read by Frank N. Nutt, chief engineer of the Haynes Automobile Co., of Kokomo, Ind., and was entitled "The Application of the Electric Gear Shift on the Haynes Car." The other two papers were presented by W. A. McCarrell, chief engineer of the Vulcan Motor Devices Co., of Philadelphia, Pa., and C. R. Underhill, chief electrical engineer of the Acme Wire Co., of New Haven, Conn., and were entitled, respectively, "A Specific Type of Electric Gear Shifter" and "Electro-Magnets and Their Application to Gear Shifting."

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FIRST HONORS FOR NEWKIRK ON EL PASO-PHOENIX COURSE

Simplex Pilot Averages Nearly 33 Miles an Hour and Leads Home Nine Survivors — Ten Cars Wrecked in Trying Contest.

It was over a mighty rough and mighty tough 517-mile course that J. J. Newkirk steered his Simplex car to victory in the El Paso (Tex.) to Phoenix (Ariz.) road race on Wednesday and Thursday last, 5th and 6th inst.; he led in only nine of the 21 who started; the other 12 fell by the wayside—and some of them fell by the way, for on some parts of the course there wasn't any side at all; it was just plain mesa, as they say in the cactus country. But as rough as the course was, Newkirk covered it at the rate of 32.84 miles an hour, finishing the long grind in 17 hours and 10 minutes. Nearly an hour and a half later, J. R. Johnston followed Newkirk home at the wheel of a Stutz, his elapsed time being 18:39. The order of finish and the times of the nine that survived the strenuous going are as follows:

Driver and car.	Time.
J. J. Newkirk, Simplex	17:10
J. R. Johnson, Stutz	18:39
M. L. Naquin, Velie	19:17
P. C. Brena, Brena	19:26
Chas. G. Miller, Mitchell	20:24
C. P. Henry, Cadillac	21:03
Oliver Creech, Buick	22:12
T. W. Smith, Buick	23:05
Charles Corbett, Cadillac	——

Though Newkirk deserves no small amount of credit for winning the race, quite as remarkable in a different sort of a way was the performance of Johnston and his Stutz. The car he drove was the one that was wrecked in practice a few days prior to the start; Jack Forest was practicing with it at the time and he was killed when the car overturned. Despite the handicap, however, the car was practically rebuilt and was late at the starting line.

Just what some of the drivers had to put up with in the long grind is well exemplified by the experience of Naquin, who rolled into third place with a Velie after troubles that would have put most other drivers out for good and all. Naquin reached Bisbee in good time—in fact, between El Paso and that place he made the best time of them all. But 11 miles outside of Bisbee the car skidded into a great boulder and smashed a rear wheel. Nothing daunted, Naquin walked back to Bisbee, secured a new wheel, footed it back to the car, but the wheel in place and drove to Phoenix in time to get third money.

Just as the sun was peeping over the horizon, Oliver Creech, at the wheel of a Buick "40," started the procession to Phoenix, and at 10 minute intervals the other 20 starters were sent along after him, the order of start being as follows:

Oliver Creech, Buick; J. R. Johnston, Stutz; John Hutchins, Buick; Tony Workman, Chalmers; J. K. Van Harlingen, Buick; M. L. Naquin, Velie; M. L. Miller, Buick; J. J. Newkirk, Simplex; William Adolph, Chalmers; Edward Steffels, Mercer; Chas. G. Miller, Mitchell; R. H. Clark, Brena; Chas. Corbett, Cadillac; Pete Thompson, Thomas; Chas. Switzer, Buick; G. D. Evans, Ford; J. H. Jack, Reo; Abe Aguilar, Hupmobile; C. P. Henry, Cadillac; A. C. Fallis, Studebaker; H. N. Reno, Chadwick.

Neither H. N. Reno (Chadwick) nor J. H. Jack (Reo) got very far away from the starting line; both of them quit before the others had reached Lordsberg, the first sizable town on the route. At Lordsberg, W. J. Rand (Chalmers) was wrecked and quit almost immediately afterward; Aquilar (Hupmobile) and Switzer (Buick) followed suit. The rest of the starters got to Douglas, where W. L. Miller (Buick) withdrew because of the terrible roads. At Rodeo, New Mexico, Tony Workman (Chalmers) slewed his car into a ditch, leaving only 14 of the original 21 starters to continue on to Bisbee, the night control.

It was not until Tucson was reached that the list of starters was further thinned, Hutchins, who was wrecked at Florence, quitting at that place. Nick Depeder (Mercer), too, quit at Tucson. Pete Thompson, at the wheel of a Thomas, was wrecked just after leaving Tucson, and the same fate overtook Fallis and his Studebaker. Of the others Corbett (Cadillac) arrived at Tucson very late and, though his time was not taken either there or at the finish, he covered the whole 517 miles.

New York Dealers' Contest Postponed.

Because of the time necessary to formulate a new set of rules to govern the contest, the reliability run, which was to have been started by the Motor Dealers' Contest Association of New York City starting November 12 and ending November 14, has been postponed until December 3, 4 and 5. Under the new rules, which were drawn up by David Beecroft, George Robertson and Emanuel Lascaris, even the accessories on a car are taken into consideration and penalties charged for derangements at the conclusion of the run or for work done on them during the run; the clock will be the only accessory that can be tampered with without penalization. The run itself is to be styled "500 Miles New York Reliability Run" and will take the motorists over Long Island roads the first day, into Westchester and Connecticut the second day and to Poughkeepsie, N. Y., and return the third day. At the end of each day's run the cars will be garaged under watchful eyes in New York. The entry list is in charge of Geo. H. Robertson of the Auto Supply Co., Broadway and 59th street, New York.

Investigate a Justice of the Peace.

Justices of the peace have been known to give automobile owners a bad half hour, but the case is reversed in Melrose Park, a suburb of Chicago, where Justice of the Peace Charles S. Bell is the man "who should worry" and, according to latest accounts, is having far from a pleasant time. He is the object of charges brought in the Cook County court by several automobile owners who have taken exception to the "judge's" way of doling out the law.

He has entered a denial to the numerous charges, one of which is that he discriminated between those who were wealthy and those who drove lower-powered and less costly cars and often "fixed it" so the rich man got off easier than the poor man. As an instance of his integrity, he testified that one Gregory asked him to fix a bail bond that could be forfeited, so the defendant would not have to return to court, but this suggestion met with a flat refusal.

Mrs. T. C. Wawter is one of the witnesses against him. She claims that her husband was haled before "his honor" and that, like a dutiful wife, she attempted to follow into court and attend the hearing. She claims that while so attempting she was pushed off the court house steps by one of Justice Bell's satellites and was humiliated and injured by her treatment.

Constable Henry Pine and Elmer Osenbaugh, the officers complained of, have been held for the grand jury in $500 bonds. A claim that there is a conspiracy against Justice Bell is being investigated.

Now Wants "Cowcatchers" on Cars.

Detroit having passed an ordinance requiring the use of fenders or "cowcatchers" on trucks, what was to have been expected has occurred. At least one of the truck manufacturers has petitioned the city council to require the use of similar devices on pleasure cars. The man who made this move is Frederick K. Parke, vice-president and general manager of the Universal Truck Co., who, in his petition, asserts that more than two-thirds of the automobile accidents are caused by pleasure cars.

Quaker City Economy Run Abandoned.

The Quaker City Motor Club's proposed economy contest, which was to have been started from Philadelphia, Pa., on Friday last, 7th inst., and continued through the next day, has been called off. Lack of enteries is given as the reason.

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WIDE MERCHA In the MOTO

GETTING CASH FOR REPAIRS

Dealer-Garageman Finds Motor World's Suggestion Valuable — Some Trouble Breaking from Old System But Change Helped Business.

A dealer and garageman who states rather proudly that he is a regular reader and student of Motor World gives this publication credit for a suggestion which has revolutionized the financial end of his repair business.

"The article in question was one which suggested that the time to get the money for a repair job was when the job was completed and delivered to a customer. It stated that the largest part of most repair jobs was labor and as labor was always cash it ought to be easy to get it. That put a new idea in my head. It gave me the courage to put into force a plan to get the cash. And I get it.

"I started by putting up a sign in the repair department that read, 'All Repair Jobs Cash. No work will be allowed out of the shop until paid for. There are no exceptions to this rule.'

Most of the "Kickers" Won Over.

"Naturally I had some kicks. Many people had been doing business with me for some time and had always enjoyed credit. They felt as if they ought to be excepted. But a few minutes' talk with them quickly showed them the justice of my position.

"One of the most striking examples of how the plan works is the case of a young business man who has dealt with me for a matter of three years. He has always been slow pay. He paid his bills, but he took his own sweet time about it. He brought his car in for about $50 worth of work and left it without noticing the sign. When he came after his car the man in charge would not release it until his check was forthcoming. He was mad. He did not think that was the way to treat a regular customer. His attention was called to the sign which had been put some weeks before and which bore a date—and he wilted and passed his check across without any further conversation. He has since told me that it jarred him a whole lot, but he paid and has paid cash ever since. I really think he has a whole lot more respect for us.

"Has the plan hurt our business? Not a particle. In fact, the effect has been just the opposite. We ourselves have grown more businesslike. It has absolutely done away with bad debts; for the same rule applies to supplies and we lose no time collecting, making out statements, etc. We guarantee all our work. If it does not turn out satisfactory we want it brought back so we can fix it right."

Incidentally, this dealer admitted that his "kicky" customers had decreased almost to the vanishing point. If there was any question about a charge it was settled then and there, leaving nothing to rankle in the customer's mind.

HAD THE WILL, FOUND THE WAY TO MAKE A TRUCK SALE RECORD

The sale of seven 1,500-pound trucks in two days by one man shows what concentration and intelligent effort will do in a season when some are complaining of quietness.

Omer Thomas of Kokomo, Ind., made this record in the sale of Buick trucks.

For three weeks after he decided to take on the truck line he wrote every prospect in the vicinity a letter once a week and sent them some kind of literature about Buick trucks. The last piece was a catalog that gave full information.

The final letter to the prospect told just what hour Mr. Thomas would be glad to demonstrate the truck and how long. The acceptance of this suggestion by the merchant addressed indicated the livest kind of interest. Demonstrations were made on schedule time exactly as agreed. How the plan worked is indicated by the results.

One truck was sold to a feed merchant, three to grocers, one to a stove manufacturer and two were purchased by a transfer company.

DEAD STORAGE AND THE OPPORTUNITIES IT AFFORDS

"Dead storage" at a regular rate is a profitable end of the garage business. Many garages depend almost entirely upon this end of the business to meet their overhead during the winter months. Certainly it is not to be sneezed at. And the garage that makes a specialty of it and places its customers' cars on jacks that take all the weight off the tires; that covers the touring car with canvas or at least goes to the trouble of carefully covering the seats so there will be no heavy accumulation of dust when the season opens; and that shows in the many other ways that they are really interested in proper storage of the cars not only can charge a little more but will have pleased customers as well.

Very few owners are equipped to take proper care of their cars in winter—and a warm, clean garage that is properly looked after makes a strong appeal to them.

Beforehand Planning Means Efficiency.

"The detailed planning of each and every operation before work is put in the shop," is one of the secrets of factory efficiency. It saves many costly experiments and useless expenses. It is the basis of scientific business effort of any and all kinds. It applies to salesmanship. It applies to office work. It applies to work in the garage and repair shop. It is worth thinking over—worth acting on.

Someone—it doesn't matter who—said "One good idea put into effect is worth a million that have no outlet in acts."

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AWAKE-N DISING WORLD

MAKE MAILS DO DOUBLE DUTY

The Two-Cent Stamp Might Just as Well Help Boost for the Sender's Business—Suggestion for Circular on Coming Winter Weather.

Use the mails for something more than the carrying of your bills, statements and correspondence. The average letter or statement could easily take along a circular with it—and it does not lessen the effect of the statement or bill or letter one iota.

Suppose you wish to push cold weather supplies—why not get out a circular about them? Make it short and to the point. Print it on first-class paper and on both sides. Have it set up neatly and simply. A heading of one or two words could lead interestingly into the subject and then, after a concise introduction it would be good business to quote articles and prices.

For example, here is a concrete suggestion:

COLD WEATHER SUPPLIES FOR MOTORISTS

Half the enjoyment of winter driving is in being prepared for it. Your car requires a little bit different care in the weather that is coming. Anti-freezing solutions, hood-covers, and oil and grease designed expressly for perfect lubrication on the coldest day all contribute to the pleasurable use of your car in cold weather.

If you don't know exactly what you ought to use, ask us. If you do know "what's what" for winter driving, drive right in and let us prove that we have it.

An ounce of prevention is worth a pound of cure—and this applies particularly to the care of your motor and running gear in cold weather.

Wideawake Motor Co.

This side of the folder has suggested to the motorist possible needs; now let the other side tell him what you can do for him. It might contain this:

COMFORTS FOR COLD MOTORS.

Anti-Freezing Solution:

Let us fill your radiator with our special solution, guaranteed in the coldest weather. Takes only a few moments to drive in and get filled up.....Per gal 0.00

Hood Covers.

Sizes for all motors. We make these to order. Leave your measurements and the cover will be ready within a few days. Your motor will run better—and you will thank us a thousand times for suggesting one. Prices range from $00 to $000, according to size and quality.

Non-Freezing Oils.

Oil that lubricates freely in warm weather may not be satisfactory on frigid days. Don't take chances. Get our recommendations.

Cold Weather Greases.

Dope that flows all right in July and August won't do the work in December. You need something lighter and more flexible. Our experience is at your service. Talk it over with us.

The list could be made shorter or longer. This is only a suggested circular. You may have better ideas. But at least do something to swing the trade your way and sell more goods.

NO MAN IS EVER TOO BUSY TO READ THINGS THAT HELP HIM

That he who runs may read is an almost worn-out adage and to give it a new twist and prolong its use it may be modified to say that so far as business efficiency is concerned "he who reads will run the fastest." Motor World has frequently emphasized this point, and now Printers' Ink aims a shaft at the man who is "too busy to read."

"He is a familiar type—the fussy, fretful man who imagines that he is about the busiest fellow in town," it says. "He often dumps in the waste-basket, unopened, copies of business or technical magazines that contain valuable articles bearing directly on his problems. He fondly believes that he is too busy practising to bother with what others are 'preaching.'

"The trouble with this type of man is that he has not learned that the real executive is the man who so plans his work as to leave a reasonable amount of time for reading and planning.

"There are shoals and breakers ahead when the accumulation of new ideas ceases.

"The man who declares he has no time to read is unconsciously advertising his small caliber, his slavery to detail, his arrested development."

PLACING THE SERVICE MANAGER WHERE HE CATCHES THE EYE

A firm of Western automobile dealers who are conspicuous for their leadership in merchandising methods have added to their service department a "service manager." His desk is placed near the door and he is the first person one meets on coming into their place of business.

The customer who wants any kind of service goes right to this man and does not at any part of the transaction come into contact with the mechanics.

"Instead of meeting a mechanic, our customers meet a well dressed, well informed diplomat. We place him near the door to emphasize the fact that we consider service one of the foremost points of our business. Incidentally, this plan brings customers straight to the man who can take care of them and relieves our salesmen entirely from details of this sort."

It is a good idea and one that is sure to be adopted by many other dealers.

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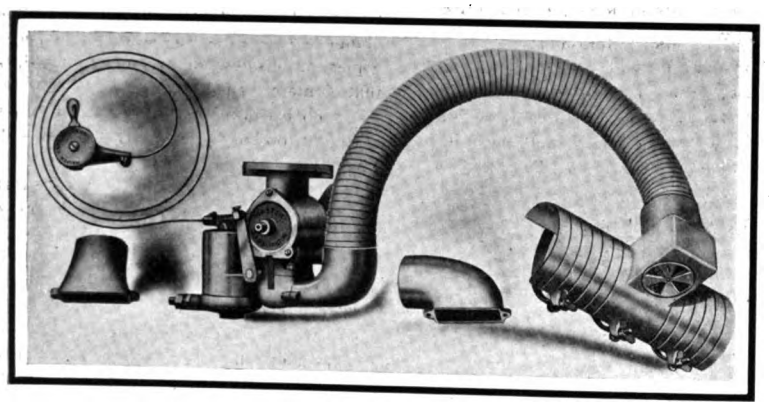
CALIFORNIA CARBURETTER HANDLES THREE-CENT FUEL

Also Distillate, Kerosene and Gasolene —Has no Automatic Valves and Only Three Moving Parts— Bowden Wire Control.

They are particularly strong for heavy liquid fuels out in California, for the proximity of big oil-fields and the low prices at which low-grade hydrocarbons can be purchased act as stimulants to those who have ideas as to carburetter design and ability in their construction. It is quite in the natural order of things, therefore, that California should be the home of a carburetter that is credited with the ability to properly vaporize and convert into an economical fuel such things as oil toppings, having a Beaume test of 41.6 and costing 3 cents per gallon in small lots; No. 1 distillate, which can be bought for 6½ cents per gallon; No. 2 and No. 3 distillate, which are heavier and cheaper grades; kerosene; kerosene and distillate mixtures; gasolene and kerosene mixtures; and just plain gasolene. A motor that developed 84.1 horsepower at 1,800 revolutions per minute burning gasolene developed 81.9 horsepower on distillate, 75.3 horsepower on kerosene and 76.4 horsepower on oil toppings, the speed in all the tests being the same.

The carburetter is styled the Master carburetter and is manufactured by the Master Carburetter Co., of 922 So. Los Angeles street, Los Angeles, Cal.; the company was incorporated in April last, has a factory at Los Angeles, and will later establish factories in the East and in Europe, according to present plans. Two types of carburetter are made—one for gasolene and the other for heavier fuels; the two are identical, however, the only difference being that in the heavy fuel carburetter it is necessary to make use of heated air exclusively, and therefore a large air heater or hood for the engine exhaust pipe is a conspicuous feature. The gasolene model has a much smaller hot air attachment. An adjustable shutter in the hot-air hood of the heavy fuel carburetter permits the admission of cold air to regulate the heat.

Both oil and air are positively regulated in the Master carburetter. The oil is fed in the mixing chamber through a series of minute holes in the fuel distributer, which extends entirely across the passage, and these holes are successively uncovered by the rotary throttle which at the same time opens the air passage; there is no butterfly throttle. When the throttle is fully open there is a very free passage and a minimum of friction. The throttle is operated by a Bowden wire control. Clogging of the fine openings in the fuel distributer is prevented by a wire mesh screen in the float chamber; the mesh is of such size that any particles that pass through the screen can also pass through the holes in the distributer. There is a sediment cup under the float chamber, from which foreign matter can be drained in the usual way.



COMPONENTS OF MASTER CARBURETTER WHICH HANDLES HEAVY FUELS

There are but three moving parts—the rotary throttle, the air damper and the float action. The simplicity of the carburetter is such that anyone, it is stated, can take it apart and put it together again without difficulty and without danger of having a pile of parts left over. There are no springs or automatic valves. All parts are interchangeable.

With reference to the lowest grade of fuel used by the Master carburetter—oil toppings—it may be said that it is the first product of crude oil distillation. Distillation of the oil toppings produces gasolene and the three distillates, Nos. 1, 2, and 3. It is clear, therefore, that the toppings contains much volatile matter, and experience has indicated that it makes a good fuel provided it can be handled in the carburetter.

CARRYING SERVICE TO THE OWNER ONE DEALER'S PLAN

Ohio Man Carries Stock of Ford Parts in His Demonstrator—Also Labels His Demonstrator so Everyone Will Know It.

Giving service to the owner when he comes after it is one thing; carrying service to him before he has asked for it is something different. But it is not impracticable, according to Ira M. Crowther, of Willoughby, O., a dealer in Ford cars. Crowther has evolved a plan whereby he makes of himself and his demonstrating car a sort of traveling service station for the owners in his territory, and he describes his scheme in the Ford Times for the benefit of other dealers. Crowther proposes that each Ford dealer carry in his demonstrating machine about $50 or $60 worth of small parts and sell them to Ford owners right from the machine.

"He suggests," says the publication, "that each agent distinguish his demonstrator from other machines by placing a winged pyramid sign on the lower half of its windshield.

"The following list of small parts, totaling approximately $65 in value, can be carried in a box under the rear seat:

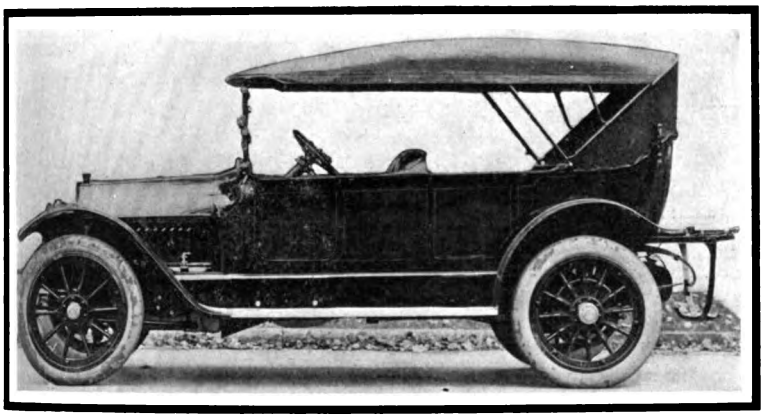
"Differential gear, 24 teeth; differential pinion, 12 teeth; diameter of bushing, ⅝ inch; D/S pinion, spindle, stationary cone, inside; spindle adjusting cone, right thread; spindle adjusting cone, left thread; spindle oiler, outer race, small; front hub, inner race, large; front hub outer ball retainer; front hub inner ball retainer; front hub large ball, ½ inch; front hub small ball, ⅜ inch; rear hub key for tapered axle; cylinder head outlet hose, 3¼ x 2 inside; spark plug wire, cylinder No. 1, 15½ inches long; spark plug wire, cylinder No. 2, 12½ inches long; spark plug wire, cylinder No. 3, 8 inches long; spark plug wire, cylinder No. 4, 8¾ inches long; commutator wire with loom; cylinder head bolt L socket wrench; starting crank ratchet pin; carburetter Kingston; vibrator with plat point; vibrator spring with plat point; vibrator bridge with plat point; rear axle shaft, tapered; cylinder head outlet hose clip; piston ring; connecting rod; spark plugs; hub caps; crank shaft rear bearing cap; crank shaft front bearing cap; crank shaft center bearing cap; exhaust and inlet valves; push rod; breather pipe, brass, 1¼ inches long; commutator only; commutator brush assembly; front spring, specify color; front spring perch bushing; radiator outlet connecting hose, 1¾ x 2¾; radiator outlet connecting hose clip; fan belt.

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TWO IMPROVED BODY TYPES FOR STEARNS-KNIGHT CARS

Straight, Unbroken Top Lines and Untufted Upholstery Features of Latest Designs—Extra Seats that Fold Out of Way.

Building a good chassis with a powerful, smooth-running and reliable motor is not all there is to automobile manufacturing in these days, and none there be that appreciate the fact more thoroughly than does the F. B. Stearns Co., of Cleveland, O. The slight changes made in the Stearns-Knight chasses were described in Motor World for July 31, as were the principal features of the standard body types. Since then, however, the body question has been given much more than the usual amount of consideration, and as the direct result of the visit of one of the Stearns officials to European plants and to the plant of the body-builder, Van den Plas in particular, two new Stearns-Knight bodies now have been brought forth. The new bodies are mounted on the four- and six-cylinder chasses, and are touring bodies carrying four and six passengers, respectively; either body can be mounted on either chassis.



NEW BODY ON STEARNS-KNIGHT CHASSIS SHOWING "ONE-MAN" TOP

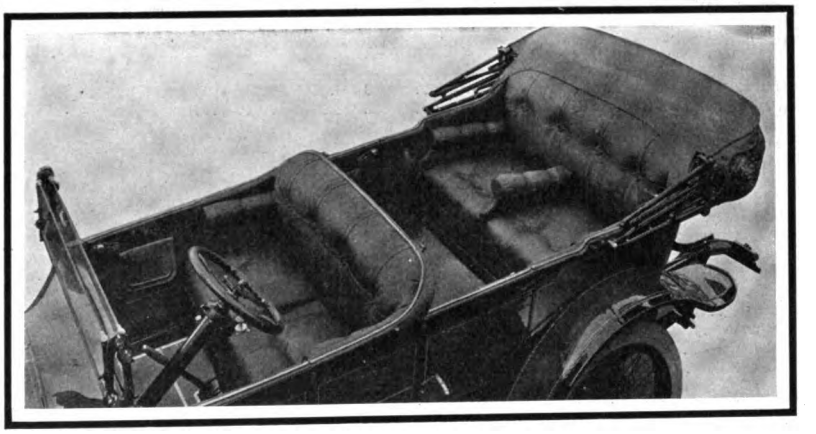
So far as outward appearances are concerned, the two bodies differ only in such matters as length, the lines being the same throughout. The attractiveness of the new designs is in their simplicity and the cleanness of the lines. The top line of the body is unbroken by projecting upholstery. The cowl is low and the body top line is little, if any, higher than the top of the motor hood, which is straight on the six-cylinder car and slightly tapered on the four. The doors are flush, of course, and there is not a single feature of the car that is individually conspicuous—a result that is not so easily obtained as many persons imagine.

Inside the body there are several innovations that have been introduced not merely because they are innovations, but because they enhance comfort, or convenience, or something equally tangible. The seats, which are rather low, have backs that are sufficiently high for comfort but which project less than usual above the top line of the body. While the upholstery is carried up over the edge of the seat-back in the usual way, the fact that it is perfectly smooth helps to give the effect of an unbrroken top line. This matter of upholstery has been given an unusual treatment in the new Stearns bodies. It is of smooth, dull-finished leather and there is an absence of the usual buttons and tufting. The monotony of perfectly plain, smooth surfaces is broken, however, by narrow bands of the same dull leather crossing the seats and backs laterally, two bands to each surface. To the lateral bands are attached other bands of the same material extending in the opposite direction, the effect being that of crossed bands with little squares of leather and buttons at the intersecting points.

Even more unusual is the treatment given the arm rests. The usual type of arm rest is replaced by a soft, large leather roll of the type not infrequently seen on large leather arm chairs. The rear seat, which accommodates two passengers, is divided in the middle and the partition is topped by one of the roll cushions, in addition to those at the outer sides of the seats. The arm rests are well below the top line of the body, and at a comfortable height for easy position.

The four-passenger body, of course, has no auxiliary seats; but in the six-passenger body there are two which, when not in use, fold down flat into the front corner of the tonneau. The seat and its support are, of course, at right angles and are rigidly built together; the back is hinged to the seat. When the seat is to be folded away the back is turned down and the seat is tipped forward. The support section drops into a recess in the floor, which it exactly fills so as to form a level surface, while the seat fits a recess in the back of the front seat and is covered by a leather flap. The seats are easily folded and unfolded and are unusually substantial.

Each of the new models is equipped with a top that can be raised and lowered easily by one man, the top swinging overhead, without dragging on any part of the body, and attaching by special ball-and-socket fasteners to the top of the windshield. The side curtains are rolled when not in use and hung across the top from the bows, where they are easily and quickly reached when wanted. Besides the top, the usual fittings are included, of course, such as robe and foot rails, receptacles for odds and ends, and other conveniences.



INTERIOR OF BODY SHOWING CUSHIONS AND ARM RESTS

Ford Drops Speedometers and $6.

Temporarily, at least, the Ford Motor Co. has eliminated speedometers from the equipment of its car. Because of the fact, it is making an allowance of $6 on each car shipped without one.

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NEW YORK MOTOR BUSES HAVE PROSPEROUS YEAR

Annual Report Shows $130,351 Profit Applied to Corporate Deficit—'Buses Increased by 24—Passengers by 2½ Millions.

How much it costs to operate a big 'bus company is made plain in the annual report of the Fifth Avenue Coach Co., owned and controlled by the New York Transportation Co., which about a year ago disposed of its taxicab business, lock, stock and barrel, to the Yellow Taxicab Co. and which now centers its whole activities on the only 'bus line in New York City; the report just has been filed with the Public Service Commission for the First District and is for the year ending June 30, 1913. The figures are particularly interesting, as the number of 'buses has been greatly increased, nearly all of those now in use being of the most modern types.

According to the report, the net profit for the year amounted to $130,351.67, which is an increase of $63,163.02 over the previous year. The amount has been applied to decrease the corporate deficit, which now stands at $286,057.23 instead of $416,997.82, which was the case last year. During the year the number of 'buses in use was increased from 81 to 105 by the addition of 24 vehicles, an increase in the total revenue from operation resulting as a matter of course.

During the year 8,884,534 passengers were carried at 10 cents each, the number representing an increase of 2,545,462 over those carried the previous year. Figuring the income from passengers at the rate of 40.97 cents per 'bus mile, the total amount of fares increased by $254,546.20, to $888,453.40; the total revenue from operation amounted to $935,668.33, which is $260,221.31 more than it was last year. As against these figures, the operating expenses amounted to $716,520.71, or an increase of $162,605.32. Included in the operating expenses are the salaries and wages paid 115 conductors, 133 drivers and 189 others, making a total of 437 who received $354,288.25, an increase of $115,981.97 over 1912.

The statement of the condition of the company reveals that the total floating capital, represented by bills and accounts receivable, materials and supplies is $275,991.01, an increase over 1912 of $92,597.36.

The 105 'buses are appraised at $538,43[illegible] which with shop and material equipm[illegible] office furniture and fixtures, real estate, ganization, and other assets, brin[illegible] the t[illegible] assets up to $899,512.20, which is an [illegible]th crease of $74,938.28. The largest si[illegible] amount in the liabilities statement is $4[illegible] 130.41, which is due associated compa[illegible] for working advances and represents a [illegible] crease of $15,337.40 for the same amount 1912.

The reserve for injuries and damages life and property has been put at $142,941 an increase over 1912 of $48,005.60. In respect, it is pointed out that charges damages and injuries are made monthly the basis of 2.7 cents per 'bus mile for juries to persons and 3 cents for damage property. Up to June 30, 1912, there w[illegible] 45 claims and suits for damages; of 85 t[illegible] were brought during the year, 83 were d[illegible] posed of and at June of this year 47 w[illegible] pending. Another interesting feature of t[illegible] report is the amount that has been charg[illegible] off for depreciation of rolling stock—$[illegible] 959.97, or a decrease of $16,565.28. The d[illegible] preciation is charged off monthly at the ra[illegible] of 1/36th of the total cost.

The figures of the statement are given i[illegible] detail in the subjoined table.

Assets.	1913	Year's Increase or (D) Decrease
Cash	$190,487.04	$55,605.56
Bills receivable	539.75	.....
Accounts receivable	6,970.75	2,441.48
Materials and supplies	77,993.47	34,550.32
Total floating capital	$275,991.01	$92,597.36
Motor 'buses	$538,434.49	$122,747.82
Shop and miscellaneous equipment	33,678.96	6,653.04
Office furniture and fixtures	3,541.94	3,170.04
Organization	25,105.27	.....
Real estate ($69,025.41, less mortgage, $20,000)	(f) 49,025.41	.....
Shops and carhouses (garage)	42,307.05	.....
Total fixed capital—gross investment	$692,093.12	$132,570.90
Accrued amortization of capital—Cr.	424,625.67	44,897.90
Total fixed capital—net investment	$267,467.45	$87,673.00
Construction in process (88th street garage)	$12,188.11	$10,707.91
Construction in process (25 motor 'buses)	20,000.00	D 5,019.25
Prepayments	6,929.32	1,425.47
Other suspense	15,423.82	14,181.58
Motor 'bus tires	15,455.26	4,292.80
Corporate deficit	286,057.23	D 130,920.59
Total	$899,512.20	$74,938.28
Liabilities.		
Taxes accrued	$41,961.89	$13,658.70
Due associated companies for working advances	451,130.41	D 15,337.40
Due associated companies for construction advances	147,695.74	.....
Miscellaneous accounts payable	60,116.22	30,691.63
Interest accrued	3,217.91	D 3,043.14
Reserve for injuries and damages	$142,941.45	48,005.60
Reserve for depreciation of uniforms	2,448.59	962.89
Capital stock	50,000.00	.....
Total	$899,512.20	$74,938.28

(e) Debits: Loss on sale of De Dion car, $500; difference between cost of one Atlas wrecker retired and amount charged to depreciation, $160.27; bills for material, etc., which were received prior to June 30, 1912, $327.56; adjustment of federal tax, prior period, $595.10; bad debts written off, $560.35; total debits, $2,143.28. Credits: Received in settlement of claims for damages to 'buses, $79.50; salvage from chassis of 'buses dismantled, $1,750; legal services and expenses charged twice, $785; minor credits, $97.50; total credits, $2,712; net credits, $568.72.

(f) Mortgage reported as Funded Debt.

	1913	Year's Increase or (D) Decrease
Number of motor 'buses (exclusive of 5 non-revenue cars)	105	
Number of round trips made during year	218,857	81,[illegible]
Number of 'bus hours during year	275,675	87,[illegible]
Number of 'bus miles (including 8,120 "idle" miles)	2,176,790	735,[illegible]
Number of passengers carried at 10 cents	8,884,534	2,545,[illegible]
Total amount of fares (40.97c. per active 'bus mile)	$888,453.40	$254,546.[illegible]
Revenue from livery service (24,347 'bus miles)	20,522.92	219.[illegible]
Advertising	22,937.50	3,052.[illegible]
Miscellaneous	3,754.51	2,392.[illegible]
Total revenue from operation	$935,668.33	$260,221.[illegible]
Maintenance, buildings and fixtures	$1,534.63	$1,026.[illegible]
Tires	45,446.75	3,22[illegible]
Maintenance, equipment (a)	175,522.48	71,659.[illegible]
Depreciation vehicle equipment (b)	59,959.97	D 16,565.[illegible]
Conducting transportation (c)	329,932.89	76,847.[illegible]
Damages and injuries (d)	66,034.11	22,210.[illegible]
General expenses	41,202.92	7,946.[illegible]
Deduct undistributed adjustment credit balance	Cr 3,113.04	D 851.[illegible]
Total operating expenses	$716,520.71	$162,605.[illegible]
Taxes	54,692.17	15,823.[illegible]
Income from operation	$164,455.45	$81,792.[illegible]
Non-operating income (interest)	2,751.94	1,370.[illegible]
Gross income applicable to corporate and leased properties	$167,207.39	$83,163.[illegible]
Income deductions—Interest on advances	35,830.52	.....
Income deductions—Interest on mortgages	1,025.00	.....
Net income for year	$130,351.87	$83,163.[illegible]
Add profit and loss adjustments (e)	568.72	D 3[illegible]
Net decrease in corporate deficit	$130,920.59	$82,809.[illegible]

Employes—On June 30, 1913: Conductors, 115; drivers, 133; others, 189; total 437. Total salaries and wages, $354,288.25; increase over 1912, $115,981.97.

Accidents—Killed, 1; injured, 28.

(a) Includes $23,800.94, superintendence; $1,982.74, depreciation of shop tools and machinery, and $4,916.58, other expenses.

(b) Depreciation on vehicles is figured at monthly rate of 1/36 of total cost.

(c) Includes $2,362.39 for depreciation of uniforms.

(d) Charges to Damages and Injuries are made monthly on the basis of 2½c. per 'bus mile for injuries to persons, and 3c. for damage to property. Credits for these amounts are concurrently made to Reserve for injury and damage claims. Balance in reserve July 1, 1912, $94,935.85; accrued during year, $66,034.11; paid, $18,028.51; balance at June 30, 1913, $142,941.45. Number of claims and suits for damages, June 30, 1912, 45; brought during year, 85; disposed of during year, 83; pending, June 30, 1913, 47.

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VER-DEMONSTRATING AS A LOSS TO THE DEALER

ore than One or Two Demonstrations Unnecessary and Serve to Increase Expenses—Reilly Explains to Sales Manager Why a Haughty Lady Became Angry—Says She Wanted "Free Livery Service."

"Sailing, sailing——" hummed Reilly. o to it, old top! Kid her along; she likes he added with emphasis, as he looked t the window at a touring car which was ssing.

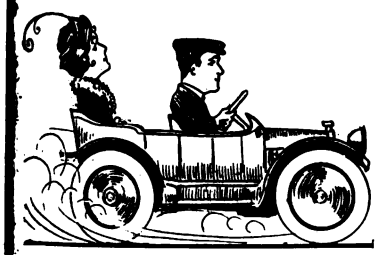
"Kid whom? What do you mean?" in- ired the Sales Manager, who felt that hen Reilly began his enigmatical conver- tion the only way to secure the key to the nation was to ask questions.

Someone Writes Letter About Reilly.

"Kid whom?" Reilly repeated the ques- on. "Mrs. Everett Mannerman Smith," id he, answering his own inquiry.

"Friend of yours?"

"She tried to make me think so once— nd I did think so for awhile," explained eilly, "but she thinks she is on my black list now and she won't even so much as look this way when she goes by."



"SHE WON'T EVEN LOOK THIS WAY WHEN SHE GOES BY," SAID REILLY

"What did the poor girl do?" sympa- thized the Sales Manager. Then he began fumbling in his pocket and exclaimed, "Mannerman! Everett! Smith! Let's see —Here it is! She wrote us a letter about you last week. I've been going to show it to you. Oh! What I know about you!" he taunted as he unfolded a letter and smiled as he scrutinized its contents.

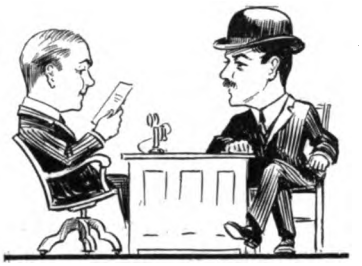
"It's all true; it's all true," replied Reil- ly. "Anything Mrs. Evergreen Smythe says about me is strictly O. K."

"Then you plead guilty?"

"Absolutely."

"Read the letter."

Reilly smiled cynically as he ran through the manuscript handed him by the Sales Manager. It was on a very refined sample of private correspondence paper which bore a monogram embossed in what looked like real gold; maybe it was. The hand-



"AG-G-H! SHE WANTS FREE LIVERY SERVICE, NOT A DEMONSTRATION"

writing was neat, and every line started with exactness at the same distance from the left-hand side of the sheet. For looks it couldn't be beaten. As to contents, it was intended by Mrs. Smith to put a crimp in the hide of that man Reilly that would bring him to a proper realization of the position of Mrs. Everett Mannerman Smith.

Whether she had already picked out a man to succeed to the Reilly business she did not state, but Reilly gathered from the tone of her letter that since he was such an unfit specimen of dealer he must necessarily be short-lived in that community.

"Well?" demanded the Sales Manager when Reilly handed the letter back, still smiling.

"I suppose you'll have to get a new dealer," solemnly answered Reilly.

"Why wouldn't you give her a demonstration?" asked the Sales Manager, referring to the complaint made by the writer of the letter.

Free Livery Service Not Demonstration.

"Ag-g-h-h!" grunted the dealer. "She doesn't want a demonstration; she wants free livery service."

"Did you give her a demonstration?"

For answer Reilly walked over to the prospect filing cabinet and returned with a card which was dedicated to the woman in question. The Sales Manager looked it over.

"Three demonstrations! The old crab! And she said you wouldn't give her a demonstration!"

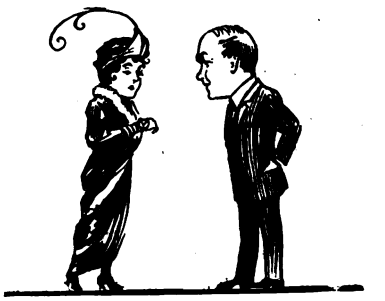
"She's quite right," asserted Reilly, "but she apparently forgot to state that the demonstration to which she referred was her fourth. And at that, she got more than ordinary prospects get, but there is a limit to everything."

"What happened, anyway?"

"Oh, it all comes back to whether a dealer wants to sink all the profits of his business in demonstrating," replied Reilly. "Once upon a time I didn't regard demonstrating in that light, but I don't do as much of it as I used to, and I'm doing more now than I hope to be doing in the future.

The Attempt to Sell Mrs. Smith a Car.

"When we dug up the Smiths as prospects we learned that the car we sold would have to be passed upon by Mrs. Smith, wherefore we devoted our time to that side of the household. We had no difficulty with the deal and thought we were progressing quite well with the esteemed lady. It finally



"SHE LOOKED AT HER WATCH AND SAID SHE WOULD HAVE TO HURRY"

came to a time when we thought it advisable to give her a demonstration and she got a fine young ride around town in the car.

"Then she dropped in one day to ask some question or other about the deal and while here dropped the hint that she was on her way to keep an engagement downtown. Suddenly she looked at her watch and remarked that she would have to hurry or she would be late. What could we do? The only businesslike and gentlemanly thing to do was to volunteer to take her down there in the demonstrator to be sure she would get there on time.

"She seemed very grateful for that trip and we thought she would come across all right with an order, but a few days after that she called up and asked us point blank if we would care to take her downtown while she did a few errands. Throughout

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all these trips she managed to ask intelligent questions about the car, and while we didn't like the idea of running a free livery for her benefit, we gave her the third ride.

"And now comes the trouble. One day about a week later she called up and asked for another ride. She seemed to think that as long as she was a prospective customer we were compelled to trundle her all over town for nothing. I didn't seem to warm up to her request, and I finally asked her if there was some particular point about the car on which she was not yet satisfied. If so, I said we would gladly endeavor to clear things up; she got real nasty about it then and tried to impress upon me the fact that she has three names and that the fact that the last one is Smith doesn't deduct any from her dignity.

Declined to Carry Her Any More.

"I finally had to tell her the truth about it, which was that we believed we had demonstrated fully the excellence of our car and could not afford to do more. I told her we believed she was satisfied with the car and that we had a model on the floor at that minute that we could let her have and that if she required a chauffeur she could engage one of our men until she could get one of her own. About that time she sat down and wrote that letter, I suppose."

"And you've lost a sale," commented the Sales Manager.

"I hope so," replied Reilly. "The truth is, we have had just about enough experience with her not to want her for an owner. She would cause more trouble, demand more free service, take longer to pay her bills and be a bigger knocker for our line than any we have thus far encountered. Anyway, I won't cart any dame like that all over town all winter and then take the chance that she will change her mind. Too many demonstrations are somewhat on the line of the old saying that familiarity breeds contempt. A prospect may be enthusiastic about a car after one or two demonstrations, but if you undertake to give him many more than that he is likely to lose his enthusiasm, no matter how good your car is."

Unlimited Demonstrations Bad Leak.

"I suspected the lady had a grouch," said the Sales Manager, as he cast an eye over the neat monogram.

"This unlimited demonstrating is one of the leaks of a dealer's business," asserted Reilly. "And it's a leak that is not suspected or discovered by many dealers. It never occurs to them to figure out what demonstrating costs. Unless a man is keeping pretty good tabs on his business he isn't likely to have this information, but



"ONE DAY SHE CALLED UP AND ASKED FOR ANOTHER RIDE"

you would be surprised to know what a nice little expense demonstrating can be."

"Probably you're right."

"I guess I ought to know. Demonstrating is only another way of cutting prices, Jim, and I will not cut prices." Reilly picked up the little iron dog on top of his desk and set him down with a bang. "You may believe that the only way to cut a price is to throw off part of the price, and you're right; but there are more ways than one of throwing off part of the price: Some dealers, who endeavor to make themselves believe they aren't cutting prices, will throw in a few accessories to make the sale or will give something else. But it's all price-cutting.

One Showing Ought to Be Sufficient.

"When you have given a man one demonstration at this day and age of the automobile world you have shown him enough as a general rule to permit him to know whether or not he wants your car. It isn't as it was in the early days when a prospect might require three or four rides so he could be sure it wasn't luck that kept the car running on the first demonstration. Any car will run to-day—provided it is worthy of being called a car—and more than one demonstration isn't a necessity."

"Don't you ever give more than one?"

"Sometimes I do," admitted Reilly, "but the times are getting fewer every year. I don't do it if I can avoid it and make a sale, and I don't do it unless I have some grounds for thinking it will do some good. The increasing dependability of cars is reducing the necessity for demonstrating to a point where any extra rides you dole out are nothing more or less than a reduction in price. You take the man's money give him a car, but along with it you him several miles of service that gained you nothing and have cost money.

"It doesn't follow necessarily that o demonstrating will put a man out of b ness, but it is a leak that it is well to s just as it is well to stop any leak. N that Mrs. Smith is sore on me she has Hadden on the string. He is the man w whom she went by just after you came He's had her out a number of times alre and if she undertakes to have her own w he likely will have her out some mo He's strong for the women, anyway; tha always been one of his failings.



"OVER-DEMONSTRATING IS PRICE-CUTTING AND I WON'T CUT PRICES!"

Applying the Rule to Coats and Shoes.

"Why, hang it, Jim! Would you ex pect a shoe dealer to demonstrate the pa of shoes you intended buying; or woul you expect to wear a suit of clothes tw or three times to see if you liked them, o a hat to see if it suited? You wouldn't ex pect it; you've been educated not to expect it, and I think it's up to us dealers to educate the public not to expect too much demonstrating. It is all right to give a man one demonstration of reasonable length but I maintain that that's enough. Some day when the glamor is entirely worn o this business maybe we won't do any at all."

"I hope—— Thank you." Reilly had reached into his desk and extracted a somewhat depleted box of cigars.

"Some day, perhaps," continued the Sales Manager, "you will be able to cut out demonstrating, but now——"

Sales Manager Wouldn't Demonstrate.

"Where'd you get that?" asked Reilly, as he watched the skill with which the Sales Manager snipped the end from the cigar the dealer had donated.

"That's just a little thing I bought the other day." The Sales Manager dangled it before Reilly's eyes. "Want to buy it?"

"Let's see how it works."

"Nope; we don't demonstrate." And the Sales Manager put it back in his vest pocket.

"Keep it, then!"

"All right, Mrs. Evergreen Smith," smiled the Sales Manager as he broke his non-demonstration rule.

Automobile Ideas for Carriages.

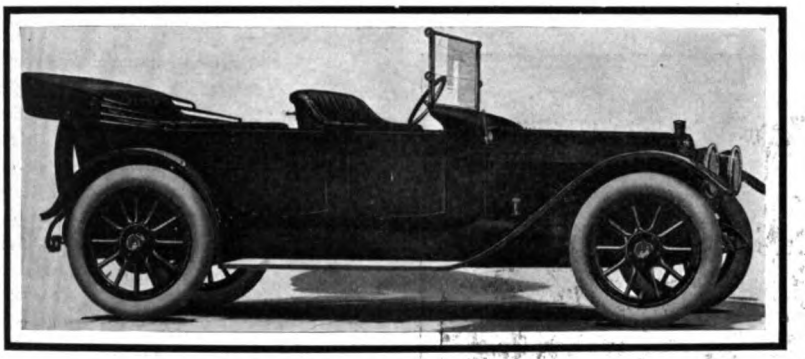
Carriage builders are not satisfied with making horse-drawn vehicles look like automobiles by the use of automobile type bodies, tops and so on, but are installing "complete electric lighting systems," including even the tail light, which goes on the vehicle, not the horse.

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MORE POWER IN "FOURS" AND A NEW VELIE "SIX"

Older Models Improved by Larger Motors and Electric Starters—Standard Practice in New "Six" Which Sells for $2,350.

More power for its two four-cylinder models; a brand new "six" to supplement them; sundry slight alterations in mechanical construction, including a new method of attaching the Gray & Davis electric cranking system on the larger of the "fours"; specification of electric lighting and engine starting equipment on all three models; and a general improvement in body lines and fittings—these things constitute the principal changes that have been inaugurated by the Velie Motor Vehicle Co., of Moline, Ill., in its line of cars for the forthcoming season. Though the changes may be viewed as more or less extensive, judging by the slight alterations that have been made by other manufacturers, the prices remain practically unaltered. The "six," which is new all the way through, of course, lists at $2,350 with either roadster, four- or five-passenger body. The larger "four" with the same bodies lists at $2,000 and the smaller "four," which appears only as a five-passenger touring car, sells for $1,500 with complete equipment.



NEW VELIE "SIX" TOURING MODEL WHICH SELLS FOR $2,350

The changes that have been made in the motor sizes of the two four-cylinder models really are the most important alterations in the line, temporarily overlooking the new "six." In the six-cylinder car, by the way, the Velie company has departed from past practice in that it has adopted for this one model a motor which bears the Continental name plate; both the four-cylinder motors are Velie products. The smaller of the two "fours" which has been designated 5-A, instead of 4-32, by way of indicating its increased horsepower, has a block-cast motor in which the cylinders measure 4 x 5½ inches, the bore being one-quarter of an inch larger than it has been in the past. In the larger four-cylinder model, now styled 4-45, the cylinders are cast in pairs and the bore has been increased one-eighth inch to 5¼ inches; the stroke remains the same and is 4⅝ inches. The "six" has its cylinders cast in threes and the dimensions are 3¾ x 5¾ inches.

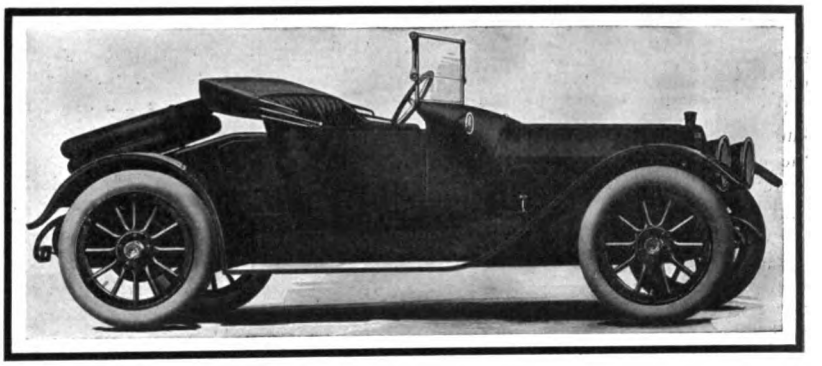
All three motors are of the L-head type and all are the same in their equipment, which includes Gray & Davis electric lighting and engine starting apparatus, Bosch dual ignition and Stromberg carburetter.

In a number of instances, chassis details also are the same. Thus, for instance, all three cars have the distinctive Velie dry disk clutch, floating rear axle, and three-quarter elliptic rear springs with the lower members underhung and left drive with center control.

The adoption of the Gray & Davis electrical system for the smaller of the two four-cylinder models has necessitated quite a little change, though the essential Velie features still remain. In the first place, the motor differs from the larger "four" in that its cylinders are in a block, which already has been made plain, and that cooling is by thermo-siphonic action. In the larger "four," the Gray & Davis starter previously was connected through a ring gear on the periphery of the flywheel, and this is the construction that has been adopted for the smaller model. In the larger one, however, this construction has been abandoned and the cranking motor drives through spur gearing to a longitudinal shaft that runs to the forward end of the engine, whence the drive is transmitted through "silent" chain and an overrunning clutch to the crankshaft. The generator portion of the system is mounted upon the forward end of the cranking motor and drives by "silent" chain from the longitudinal shaft through which the starting motor operates. The chain is enclosed and is adequately lubricated by splash from the crankcase.

Practically the only other change that has been made in the smaller four-cylinder model concerns the fuel supply system. Instead of feeding directly to the carburetter from the main tank under the front seats, the fuel is pumped by pressure to an auxiliary half-gallon tank located under the engine hood. The change has been necessitated by the increased depth of the upholstery that is used.

Though the camshaft drive in both four-cylinder models is by "silent" chain, the arrangement in the smaller motor is quite different from that in the larger one. The drive is a triangular one and, by way of obviating the possibility of whipping in the chain, chain shoes are fitted, this ensuring quiet operation and freedom from the danger of breakage due to stretch. To permit of necessary adjustment of the chain, the magneto sprocket is carried in an eccentric bushing which makes alteration of the chain tension possible without the necessity for disturbing the magneto mounting. The motor suspension also is slightly different. The forward end of the motor is hung to the center of a cross frame member. At the rear the motor is supported on a tube which extends through the motor supports and is flexibly connected to the side frame members.



ROADSTER BODY ON VELIE "SIX" CHASSIS SHOWING LUGGAGE COMPARTMENTS

Changes in the larger "four" include the removal of the fuel tank from its former position under the front seat to a new loca-

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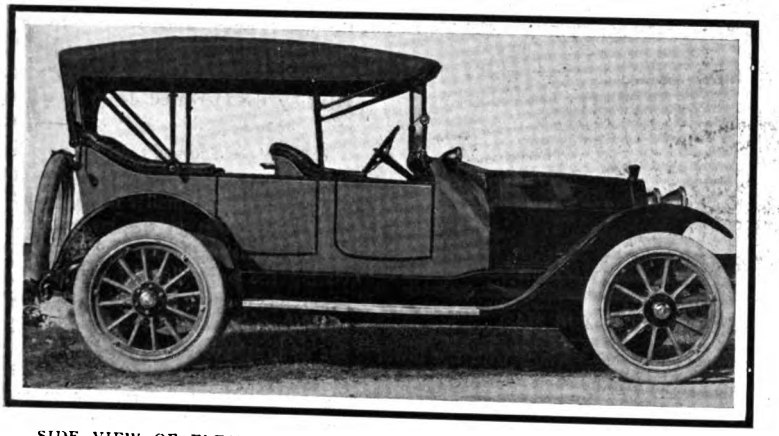
tion adjacent to the rear axle and the incorporation of an easily cleanable fuel strainer under the engine hood. Changes in the motor are considerably more extensive and, as a matter of fact, amount virtually to a reconstruction.

Instead of being mounted at the side of the motor and driven by a longitudinal shaft, the water pump now is at the front and is at one end of a worm-driven transverse shaft with the magneto at the opposite end of the same shaft. The arrangement is such that the pump now comes on the valve side, thus facilitating the pumping of cold water first to that part of the water jackets that surrounds the valve ports. Otherwise the motor has not been changed greatly and incorporates a number of unusual features, prominent among which is the arrangement of the carburetter and the manifolds.

Reversing the usual practice, the carburetter is mounted on the opposite side of the cylinders to the intake manifold and therefore is unusually accessible. The intake manifold passes over the tops of the cylinders and is so arranged that the float chamber of the carburetter comes nearly on a level with the cylinder heads. The hot air intake from the exhaust pipe passes around the rear end of the cylinders. Another interesting feature of construction is the method of attaching water headers and manifolds. Instead of being fastened to the cylinders by means of the usual bolts and nuts, a special type of screwed coupling is used. The coupling comprises a split wedge ring which seats against the flared end of the manifold and is held in place by threaded gaskets which screw down to the cylinder castings. The arrangement provides for a gas-tight joint which is self-seating, while at the same time the joints are quite easily broken and are interchangeable.

From the motor, power is transmitted through a dry plate disk clutch and a four-speed selective gearset in which third speed is the direct drive. Motor and gearset are mounted in a sub-frame which is a channel section filled with ash. Propeller shaft drive incorporating two Spicer universals transmits the power to a Timken rear axle of the type in which the new adjustable cam-plate for the internal brake is used. Two adjustments for the brake thus are provided, one at the differential at the cross rod and the other on the outside of the brake drum. Torque is taken by a substantially trussed torque arm with ball and socket connections that are carried in spring cups.

In the new six-cylinder model, the construction is practically identical with that of the larger "four" even to the method of mounting and driving the Gray & Davis electric lighting and starting system. The motor, of course, is different, though it differs not a bit from the usual and familiar Continental design.



SIDE VIEW OF ELECTRICALLY LIGHTED AND STARTED VELIE "FOUR"

Bodies, as may be seen by the pictures, exemplify all that is modern in design and construction, straight lines, clean running boards and slightly crowned fenders being among their more important features. In the roadster model, which may be mounted on either the four- or six-cylinder chassis, the sloping rear "deck" is divided into two compartments with doors on either side; each part of the compartment is large enough to accommodate two full-sized suit cases each, so there is no lack of room for luggage. The bodies on the larger of the two "fours" and the "six" are interchangeable and may be applied to either chassis; the difference in length is in the hood of the "six."

Equipment is complete and in the roadster models is supplemented by a Tanner gasolene tank gauge. Windshields are properly built into place and the top holder is of an improved type in which a spring ratchet device operates to tighten the folds instead of loosening them when the car passes over rough roads with the usual vibration.

Cooperative Truck Service on New Lines.

In their endeavors to help owners of motor trucks to obtain the best possible results from their machines, manufacturers and agents are leaving mighty few stones unturned in searching out service plans that will increase and maintain the efficiency of their trucks. Success in this quest rebounds to the credit of the machine and its makers, as well as helping along the owner, and so there is a double incentive for the latest plan of the Federal Motor Truck Co., of Detroit.

Briefly, the idea is to establish a sort of cooperative working agreement between the various Federal branch houses and service stations, so that any Federal truck will be taken care of by any Federal station, regardless of who happened to sell that particular truck or where it might be owned. At a recent meeting of Federal dealers in New York a start was made by establishing a cooperative chain from New York to Baltimore, dealers in New York, Boston, Providence, Hartford, Bridgeport, Newark, Philadelphia, Wilmington and Baltimore having joined hands and arranged to look after each others' cars when occasion required. Incidentally, the Federal idea is to sell trucks on the basis of guaranteed operating cost; in fact, the New York company will maintain and operate a truck for a given cost and guarantee service, providing another machine if for any reason there is a lay-off, making repairs and doing everything necessary to maintain an uninterrupted service.

Studebaker Electrically Equipped Truck.

Fully alive to the possibilities of electric lighting and engine starting in the commercial vehicle field as well as in the field of pleasure cars, the Studebaker Corporation, of Detroit, Mich., is preparing to place on the market a new 1,500-pound capacity gasolene propelled delivery wagon incorporating these two features; the car is to be equipped with either panel or express body and will sell for $1,150. The new delivery wagon is built upon a special chassis differing considerably from the company's pleasure car chassis, though the Studebaker "four" motor is to be used for power. It will have a governor, however, to mitigate the evils of over-speeding. The springs are heavy and the frame is substantial. A full-floating Timken axle is another feature of the car, which is to have 34 x 4½-inch pneumatic tires. The steering wheel is placed at the left side with the control levers in the center.

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REPAIR-SHOP—THE MAGNET OF GARAGE TRADE

Up-to-date Mechanical Department Regarded by New Rochelle Garageman as His Biggest Business Getter—Every Car Owner Comes There Some Day—Business Methods That Make for Efficiency.

Two Englishmen fought in Australia. One "winged" the other with his gun and got away before the other could unlimber for action.

Said the "winged" man: "The best way to get him is to go back to London and wait for him in front of Nelson's monument in Trafalgar Square; every Englishman passes there at some time." The "winged" man went back, waited six months and "got his man."

The Garageman's Nelson's Monument.

National advertisers are told that an electric sign at Broadway and 42d street is at some time seen by nearly every one in America—which may be true. But the point is that a means of advertising which at some time gets to everybody is extremely valuable.

In building a garage business the garageman very likely would like to find some way of getting in touch with every car owner in his vicinity; he would like to find something which corresponds to Nelson's monument.

It perhaps may not apply to all garages, but so far as an establishment of his size is concerned and so far as the size of the community is concerned, G. O. Reynolds, of New Rochelle, N. Y., believes he has found a "Nelson's monument." It is his repair-shop.

He regards his repair-shop as the peg on which all his business hangs; he considers it the means of providing him with an increased future business. Why? Because, no matter how good the car may be and no matter how much of a home-made mechanic the owner may be, some day he is almost certain to have to go to a good repair-shop; wherefore, the garageman with a good repair-shop has only to wait for the motorist—and some day he will "get him."

But the garageman who contemplates taking Reynold's advice would do well to remember that the "Nelson's monument" is not "a" repair-shop but "a good" repair shop. A poor repair-shop does not enter into the consideration.

Neither is it to be inferred that "getting" the motorist means "getting the hooks into him"; what it means from the Reynolds viewpoint is a means of contact whereby the garageman is enabled to show the car owner the excellences of the garage and thereby possibly make him a patron.

Reynolds, who operates as G. O. Reynolds, Inc., in this little city, which has 30,000 inhabitants, and wherein was laid the scenes of "Forty-five Minutes from Broadway," typifies the garageman who is going to be among the "fittest" when the weeding-out process is ended. A thorough mechanical man himself, he is likewise a business man—this latter being what so many garagemen are not.

Love of Luxury Made Him Garageman.

He is a graduate of a technical school and has been on the way to his present position since 1906. At that time he had a position in New York City and bought an automobile, but repairs and supplies cost so much that it was a question of giving up the car or making more money. Reynolds was real fond of that car and disliked parting with it, so he began selling supplies near his home in Pelham to pay for his luxury. Then he rigged up a little shop to do as much of his repair work as he could and finally began doing a little for other people. It wasn't long before his little garage and supply business began to grow and the possession of that car again had its influence. He had to give up the garage and supplies or the job in New York, and if he gave up the former he couldn't keep the car, so he threw up the job and entered the garage business in earnest.

He had a partner then, and in 1908 opened a branch in New Rochelle, mostly to sell supplies. Later he bought out his partner and concentrated the whole business in New Rochelle, where his principles have caused his business to reach its present proportions. Now he has a three-story concrete garage which is so fireproof that he held a clambake on the floor several months ago to demonstrate the safety of the building, as was told in Motor World at the time.

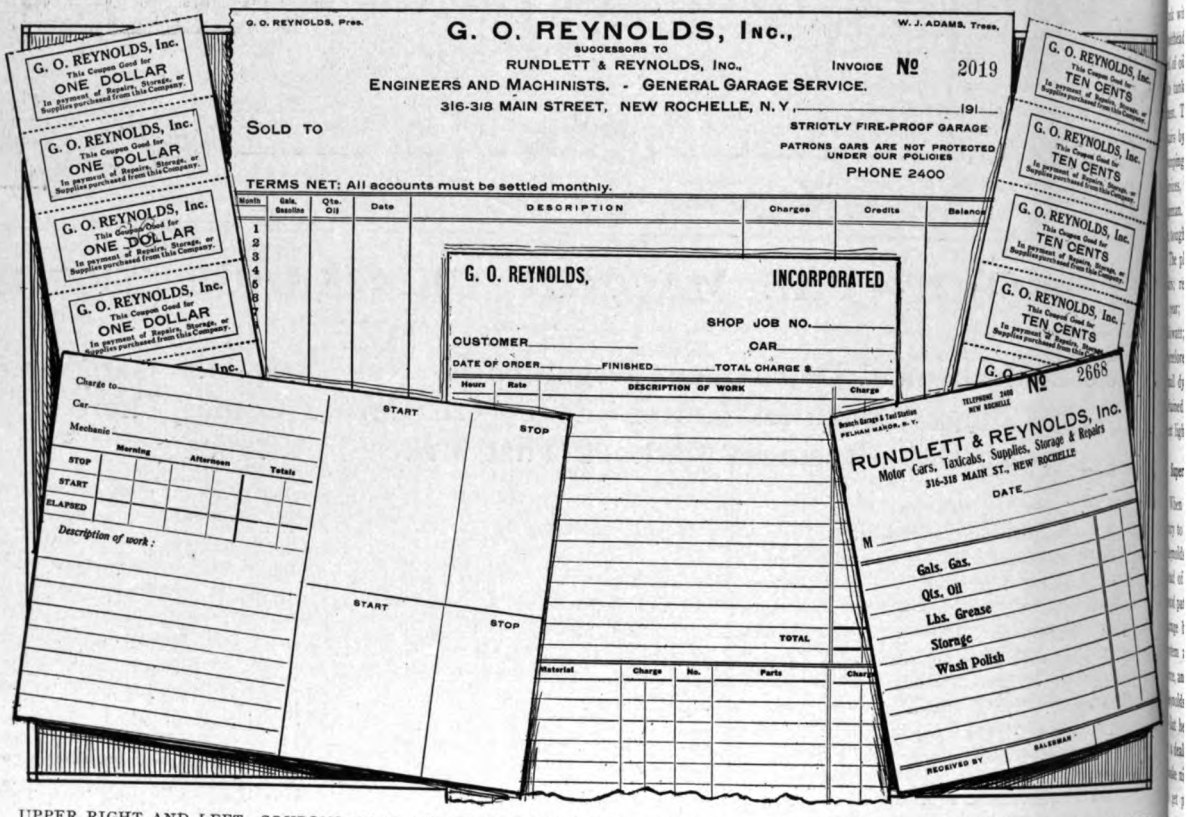
Lathe of Extraordinary Capabilities.

His "Nelson's monument"—or repair-shop—occupies practically the entire second floor and is operated under modern efficiency methods. A sample of the plan followed is shown in a lathe which takes the place of several ordinary lathes. It can take a 36-inch wheel, will take a piece 13 feet between centers, has 15 speed changes and can turn 124 threads to the inch. The one lathe does everything.

Welding used to be a problem and was a class of work that had to be sent outside, but since this offered an opportunity for the car owner to get acquainted with some other shop a complete welding outfit was installed. Reynolds himself can do a job of oxy-acetylene welding that might well be the pride of any shop. So well known is the shop that a moving picture company sent in a cast steel piece last week to have a section welded on, indicating that the shop is known outside automobile circles. The garage has a power elevator, turntable, supply department, paint and finishing de-

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FORMS USED BY PROGRESSIVE NEW ROCHELLE GARAGE TO FACILITATE OPERATIONS



UPPER RIGHT AND LEFT—COUPONS THAT CHECKMATE DISCOUNT SEEKERS. UPPER CENTER—INVOICE OF REGULAR PATRON'S MONTHLY PURCHASES. LOWER LEFT—CARD THAT GIVES ACCURATE ACCOUNT OF WORKMAN'S TIME. LOWER CENTER—DOUBLE-DUTY ENVELOPE AND SHOP ORDER CARD. LOWER RIGHT—SUPPLY DEPARTMENT'S RECORD SLIP

partment, complete shop equipment, storage space for fifty or more cars, toilet and wash rooms, and above all some sane and efficient systems of shop and business management that mean much.

Daily Approach Manufacturing Stage.

"We are running toward the manufacturing end of the business every day," said Reynolds. "We are approaching a point where we can put up a complete car in our shop. Even now there aren't many things we can't do. We can build a wood wheel, finish it and have it on a car in 12 hours. We can do all kinds of welding, we can finish a car completely and we aim to do everything else the car owner can ask."

Having things right is a fetish; the system employed is not red tape but is intelligent and efficient. A first rule in the repair shop is that the foreman is the man who gives orders. A sign on the wall states that it makes no difference if Reynolds is in the shop; the foreman will continue to give orders. This fixes responsibility and gives progress an orderly course.

When a job comes in an estimate is made on it. This is written on an order card which provides spaces for the required items and which is illustrated herewith. When the estimate is accepted by the owner the estimate card goes to the shop foreman and automatically becomes an order. "But," said Reynolds, "since we had to have the card, why not make it an envelope?" and an envelope it is.

This envelope follows the job through the shop. The cards for the time spent on the car by the workmen are tucked into the envelope. Separate bills for supplies of any description are inserted and all the data connected with the job is stowed away in that envelope. When the job is done the bill is itemized from the data and sent to the owner. Until the bill is paid this envelope furnishes an original record of every tap of work done on the car and anyone in the office can figure up the bill at any time.

Efficiency of Special Billing Device.

That applies to special jobs of repair work. In the case of bills for regular patrons Reynolds had a special billing machine made. This has stop keys for various positions and is made to fit a large 10 x 18-inch book. If a car owner buys ten gallons of gasolene the book is opened to his page and the item typewritten in duplicate. The bills are totalled monthly and the perforated sheets torn out. Reynolds does not have a high regard for loose-leaf affairs and therefore uses the perforated leaf volume.

Coupon Book Checkmates Price-Cutting.

If a car is taken in by a transient for a wash and polish, a card on which is printed "Wash and Polish" is tied to the vehicle. "We used to write the words every time," said Reynolds. "Now all we have to do is to tie on the card. If the car belongs to a regular customer who wants his car washed only occasionally we tie a plain green tag on the front end on those nights when he wants it cleaned."

Men who want discounts encounter a clever scheme. They are asked to buy for $45 a coupon book good for $50 worth of work. This contains 10-cent and dollar tickets. Reynolds estimates that if he can get the money in advance he will very nearly break even on the discount question.

There are 21 names on the payroll, and every name means value received for the money, but not through driving of men. On

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the second floor is a four-compartment oil tank with a track and hand chain hoist overhead. One workman can take a barrel of oil up to the elevator, lift it up over the tank and empty it into any compartment. The oil then runs to faucets downstairs by gravity. This saves the labor of pumping and, like many other labor-saving devices, was economically built by the garageman. It cost $21, where the same outfit bought would have cost $150.

The place is filled with penny-saving affairs; reusing the boiler water saves $200 a year; current for power costs 4 cents a kilowatt; current for lights costs 12 cents; therefore the shop shaft is hitched to a small dynamo and current for lighting is obtained at considerably less than the 12-cent lighting rate.

Supervised Building of Third Story.

When it was necessary to add a third story to the building, several months ago, Reynolds supervised the job himself. Instead of buying a flight of iron stairs, a wood pattern was sent to a foundry and the garage built its own stairs. The elevator system also was installed by the garage force, and the things that can't be done by Reynolds and his men are few.

But he is more than a garageman; he is a dealer in cars, although he doesn't lie awake nights wondering where he is going to get prospects. He is primarily a garageman and doesn't pretend to do more car selling than his garage business will stand. But at that, his car sales bear a humorous complexion. He has two salesmen, but they don't sell as many new cars as they thought they would when they began. One day one of them complained to Reynolds, "Casey has a car that he wants to sell; he doesn't seem to want to buy one of our new ones."

"If you can get the old one at a right price, buy it," responded Reynolds.

Makes Money on Used Cars.

"The salesman bought it," laughed Reynolds, "and now I guess they spend as much time hunting for used-car bargains as they do for new car prospects. I found that the used car traders in New York were picking up some fine bargains up here, so we decided to get a few ourselves. We can buy a used car, fix it up in good shape, sell it and make more money proportionately than we can on a new car. The investment is less and the profit is nearly as much as on new cars. There's a 1910 car that cost us $125; we did about $75 worth of work on it and we ought to get $400 easily for it. If we do we double our money.

"Also, there is this desirable feature of selling used cars: We don't have to give service. We sell a car and that ends the transaction. We sell about 50 cars a year and half of them are used cars that we have fixed up."

With Reynolds there is no used car problem; when it is the sale of a new car he fights shy of a bad trade, but if he can buy the used car at a good figure he would rather do that than make a poor trade. A contract form is used that will fit nearly any sale.

Tire Advice Given Customers.

Customers are given wise advice in regard to demaged tires. "We found," explained Reynolds, "that when we repaired a shoe and it blew out again and was sent to the tire company for adjustment they would say our treatment of it caused the trouble, so now we just send the shoes direct to the tire company's branch and avoid all trouble. We limit our repairing largely to inner tubes, although we have equipment for all kinds of work and can do anything.

Reynolds's business associate is W. J. Adams, who is treasurer of the company and who attends to much of the business end of the concern, thus permitting Reynolds to attend to the planning and the larger affairs of the business.

Bloomington Garagemen to Unite.

Garage proprietors in Bloomington, Ill., which has a population of 25,000, are not unlike the garagemen in other towns, in that they have grievances the remedying of which, they are convinced, will do much to increase profits and better their business; and they are not unlike their business brethren in other cities in that they have decided to form an association for mutual betterment.

One of the chief objects of the movement is the slow-pay customer, but a published description of the proposed organization reveals that the garagemen have discovered an unusually complete list of undesirable features of their trade. "The slow pay patron who keeps the garage collectors calling upon him month after month and who finally pays under threat of a suit, and who retaliates for the favor of long extended credit, by transferring his patronage elsewhere, will be placed upon a list, a copy of which will be furnished each member," says a statement of the organization's aims and objects.

"It is also desired to protect the members against various impositions which only the cooperation of all of the repair-shops can bring about. One of these is the individual who drives his car into a garage, pays no storage, borrows tools, frequently failing to return them and sometimes carrying them off and who sponges in many other ways from the shop and without paying anything for the accommodation given him.

"There is another individual who arouses the indignation of the repair-man, and, while enjoying the courtesy and hospitality of the proprietor, will take advantage of a tip heard in the garage that some patron is about to buy some supplies, by filling the order for them, and taking about one-half of the legitimate profit of the dealer, who has rent, light and heat to pay.

"Another individual who arouses the ire of the proprietor is the curbstone repair artist, who is constantly seeking the light work in the way of adjustments which can be given attention at private garages.

"It is this class of work which is most profitable to the garages, and yet they are forced to lose much of it. These and other evils which harrass the proprietors and which have been steadily growing of late years, may be remedied wholly or in part by the organization proposed. It is also hoped to put an end to cut-throat competition in various wares which legitimately belong to the garages and enable the proprietors to make some money. With warfare and ill feeling among the dealers, few can keep their receipts above their expenses and it is a daily battle to make ends meet."

First of the 1914 Calendars Appears.

As usual, first in the field with a calendar for 1914 is the National-Acme Mfg. Co., of Cleveland, builders of automatic machinery for making screws and other things that have to be turned, threaded, tapped, milled, and otherwise machined, and makers of automatic machine products. The calendar, which is sightly, to say the least, takes the form of a large envelope with two cut-outs in its face, through which the monthly calendar and a picture, which latter shows various National-Acme machines and their products, are visible. On the backs of the changeable sheets there is information of interest to users of automatic machines and their products, and order blanks which will produce still more information if turned in.

Painter Who Believes in Signs.

It is true economy, sometimes, to make things serve double purposes rather than have them stand idle part of the time. Animated by this thought, an ingenious repair-shop proprietor who goes so far as to paint the bodies of the cars he mends, made a sort of canopy for cars in process of being varnished by suspending over the car a big canvas sign that was not on duty. The sign not only kept ordinary descending dust off the fresh varnish, but also the dust and dirt dislodged from the ceiling by overhead vibration.

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MOSLER TO DOMINATE SPARK PLUG BUSINESS

(Continued from page 6.)

late court, which held that a man, to patent anything, had to intend to patent it; the mere fact that his drawings show a thing does not mean that he has patented it. Prior plugs showed what Canfield patented, but the specifications did not state that the patents covered these details.

"With a deliverance of the Circuit Court of Appeals for the Seventh Circuit we fully concur," said the court. "It reads as follows: 'A patent for a mechanical combination is not anticipated by a drawing in a prior patent which incidentally shows a similar arrangement which is not essential to the first invention, and was not designed, adapted, or used to perform the function which it performs in the second invention, and where the first patent contains no suggestion of the way in which the result sought is accomplished by the second inventor.'

"Gas-Machine" Proportions Accidental.

"The prior publication especially relied upon is known as 'Die Gas-machine.' All that there is in it which is at all relevant is the following figure and description: . . . There is nothing in this description which calls for any recess at all. . . . There is nothing to show that the proportions of the drawing are other than accidental; the draughtsman would have correctly depicted 'Die Gas-machine' of the prior art if he had proportioned the parts differently, showing a recess whose depth was no greater than its width.

"The next reference to the prior art is a patent to Sansevain (U. S. No. 461,802). . . . The specification is elastic; it provides that the spaces around the posts shall be large enough to leave spaces around the posts, thus preventing contact. Such spaces might be very much larger than Fig. 4 shows and still fit into the combination of the patent. So too the thickness of the lower plate is the draughtsman's accidental selection. The specifications state merely that it is a lower plate or disk between the porcelain and a shoulder in the tube. It might just as well have been shown in the drawing as one-fourth the thickness indicated in Figure 4 and would then be all that the patent calls for.

Sainsevain Device Not Anticipation.

"Here are recesses with insulation at the bottom of them: as drawn they are much deeper than wide, but their proportions are apparently an accidental conception of the draughtsman. . . . But if its thickness were reduced, the depth of the recesses would also be reduced, and with an enlargement of the clearance spaces, the recess of Canfield would entirely disappear from the Sainsevain drawing, while the drawing would still remain a perfectly accurate picture of the description which Sainsevain gave of his invention.

"To predicate anticipation on such accidental resemblances found in drawings only would be to extend the doctrine of the Consolidated Bunging case too far.

"In Canfield's patent, however, the proportions of the recess constitute the gist of the invention. It will not be necessary to discuss in detail the other similar references to patents of the prior art. We do not find any of them in which the specifications and claims call for a recess between electrodes which enter a sparking chamber, the proportions of which recess are made a feature of the patented structure, and which will, in fact, function as does that of the Canfield patent.

Rules That Patent Taught the Art.

"It is next contended that the patent in suit taught the art nothing of value, because it did not indicate what insulating material should be used. Porcelain was well known in this art as an insulator, it was used in prior devices and is used today. Naturally it would be the material which one skilled in the art would select if he were to build a spark plug according to the instructions of the patent. Respondent's expert testifies that when made in large masses porcelain is neither electrically nor mechanically strong enough to meet the strains to which a spark plug is exposed. The patent states as we have seen that a recess for a quarter-inch diameter electrode works satisfactorily by being half-inch diameter by one and a quarter inches deep. Assuming this to be the diameter of recess shown in the drawings of the patent and using it as a scale, the witness figured out that the size of the insulators of the patent would be some 3 to 4 inches in diameter and further testified that efforts to produce porcelain insulators of that size which would stand up to their work proved a failure.

Porcelain Material Natural to Use.

"We find this evidence unpersuasive. If such large masses of porcelain did not work, the natural thing to do would be to reduce their size. The specifications do not require a slavish adherence to the proportions shown in the drawings. . . .

"If a quarter-inch electrode requires a half-inch recess, an eight-inch electrode would presumably be accommodated by a quarter-inch recess, which would reduce all other proportions by half. Moreover the patent is not restricted to two recesses, one around each electrode. The claim includes 'a recess around the electrode or electrodes.' The very 'Gasmachine' so much relied on (assuming that its casings were imperforate) shows a recess surrounding one electrode (which electrode is embedded in porcelain of apparently the small dimensions of that in the modern spark plug) while the other electrode is seated on the metal casing.

"The teaching of the patent is that there shall be a recess of proportions to trap air between the two electrodes. It seems to us that a skilled mechanic familiar with the prior art as shown in this record would have had no difficulty in securing such recess and at the same time using a porcelain insulator of a size small enough to be stable."

Holds First Claim Clearly Infringed.

Other claims than the first were not declared infringed by the court, but the one claim allowed is sufficient for the purposes of the complaining corporation.

"As to infringement," said the court, "we do not understand that there is any real contention as to infringement of the first claim. . . . All the spark plugs of defendant which are complained of have the specific recess of Canfield. It is asserted that some of them nevertheless get foul, which to us seems immaterial. Much of the briefs is devoted to a discussion as to the meaning of the second claim. It is unnecessary to consider it, since infringement of the first claim is sufficient to entitle complainant to whatever relief it may be entitled to.

Touching Upon the Point of Laches.

"It is further contended that relief should be denied the complainant because of the laches of his predecessors in title; he was prompt enough himself, but of course is affected by any laches of prior owners. The patent was granted October 18, 1898. Canfield died March 12, 1899, and the patent was held by his administrator till March 13, 1901, when it was transferred to patentee's brother, Charles J. Canfield. He assigned it December 3, 1903, to E. D. Wheeler, who on March 12, 1906, assigned to Association Patents Co., a corporation not engaged in the business of manufacturing or selling engines or spark plugs. The corporation assigned the patent to complainant March 25, 1909. Suit was begun in September, 1909.

Why Mosler Gets No Back Damages.

"Infringement began in 1901 and was continuous thereafter by various manufacturers. One company sold 50,000 of one type between 1901 and 1904 and, though no specific figures are given of sales of other infringing types, there is evidence that such were sold in large quantities on the open market and were well known to the automobile trade. There is no direct evidence that any of the successive holders of the patent prior to complainant knew of these infringing sales, none of them was examined, some were dead. There have been cases where all relief has been refused to patent owners who were negligent about enforcing their rights for a long period of time. Richardson v. Osbourne, 82 F. R. 95, affirmed by this court 93 F. R. 826. These cases have been such as presented 'unusual conditions or extraordinary circumstances'; usually with knowledge of infringement the owner of the patent has stood by and, without objection or warning, has allowed the infringer to invest his money in a plant for manufacturing infringing devices."

Having decided to grant an injunction under the first claim of the patent, the court ruled that because of the lapse of time between the issuance of the patent and the bringing of the suit no damages for past infringement should be allowed. Commenting upon this situation, it said:

"Under the principle enunciated in Menendez v Holt, 128 U. S. 523, we find nothing in the case which would call for a denial of injunctive relief, postponed perhaps for some short period, such as thirty days, so as to give defendant opportunity to arrange its business accordingly.

Easy to Have Learned Infringements.

"As to any claim for profits and damages, however, the case is peculiar. As we have seen, there is no direct proof that any of the successive owners actually knew of infringement. It is argued that they could not have known of open and notorious infringement, because they were none of them in the business of making and selling engines or spark plugs. In that respect the case is peculiar.

"Usually patents are held by persons whose business is of a sort that the patent pertains to; here the owners were not engaged in any such business. The patentee was a lumberman; his administrator was a trust company; his brother was a lumberman; Wheeler was a mechanical engineer; the Association Patents Co. was a mere holding company. None of these successive holders made any use of the patent, except that the patentee made two or three spark plugs for use in his own power pleasure boat. None of them manufactured any of these spark plugs, nor did they procure any to be manufactured, nor did they sell any, nor did they, so far as appears, make the slightest effort to induce any one engaged in the automobile industry to make such plugs on some basis of royalty.

Patent Little Valued by Past Owners.

"During this long period the successive owners treated this patent as if it were of no importance whatsoever, of no use to any one. Apparently they made no effort even to ascertain if there were any infringements of it, or to caution or warn anybody against infringement. The infringement was not an act done in a corner; had the owner taken the trouble to send a competent man to the warerooms of a few dealers in automobile supplies (of this sort) or to any of the periodical automobile shows, where manufacturers send their devices and point out their claimed advantages, there can be little doubt that infringement would have been discovered years ago. An advertisement in some of the trade papers to the effect that the owners of this patent would prosecute infringers, might have warned the trade that this patent was not, by its owners, regarded as a thing of no account, in which they took no interest. It might well be that had some such announcement have been made, infringing manufacturers would long ago have modified their devices so as to avoid infringement as they could easily do by making the depth of the recess less and its width greater, thus avoiding the specific proportions which constitute the essential part of the patentee's claim.

Too Late Now for Past Royalties.

"Where owners have remained thus supine for many years, shutting their eyes to what was going on in the art to which the patent belonged, and thus leading defendants and others to suppose that they intended to make no claim that their patent dominated a portion of that art, it seems to us inequitable that they should come at this late day and insist on being granted an accounting for damages and profits during their long period of inaction.

"The decree is reversed with half costs of this appeal and cause remanded with instructions to decree in favor of complainant on the first claim with an injunction but without any accounting for profits or damages, and one-half costs to complainant."

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TRUCKS AND PLEASURE CARS UNDER ATLANTA SHOW ROOF

26 Makers of Vehicles Display Their Wares Under Billowy Blue Bunting "Sky"—Accessories and Sousa's Band, Too.

Under a "sky" of billowy bunting of a shade which the ladies style "electric" blue, but which mere man halts at describing at all, the Atlanta (Ga.) Automobile Dealers' Association opened its annual exhibition in the Auditorium on Saturday night last, 8th inst., and if you take it from the dealers themselves it is "some show," to use a slangy but none the less expressive phrase. Certainly, it is bigger than any show Atlanta ever had before, and, if anything, the decorations are just a wee mite more pretentious.

Beneath the blue "sky" there are streamers and more streamers of creamy white bunting so draped that the part of the building that keeps out the rain isn't visible at all. Still lower down—that is, under the streamers—there is a single great gasolier, though no great dependence is placed upon it for light; it is more in the nature of a decoration than anything else, for the real light that shines on the 26 makes of pleasure cars, the six makes of commercial vehicles and liberal sprinkling of accessory dealers comes from strings of brilliant Tungstens hung from the ceiling, though none knows just how the hanging has been done.

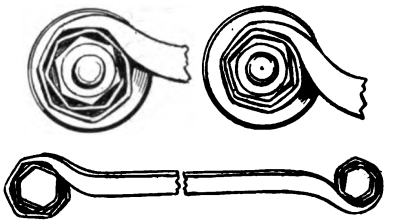
The weather on the opening night was not of the particular brand that seduces home lovers away from their hearthstones; it rained. But in spite of the rain and the chill in the air, a great crowd of first nighters turned out to look at the cars and to hear Sousa and his band. Only they didn't hear Sousa at all. They heard the great pipe organ that fills up one end of the auditorium, instead, though those who went back on Tuesday night heard Sousa and they may hear him every night this week until the doors close on Saturday night, if they choose. The complete list of exhibitors and the wares they show is as follows:

Pleasure and commercial vehicles: Atlanta Auto Sales Co., Henderson; Stewart Motor Truck Co., Stewart commercials; Carl W. Fort & Co., Marmon; Maxwell Motor Sales Co., Maxwell; J. W. Goldsmith, Jr., Hudson; Steinhauer & Wight, Cadillac; John M. Smith, Pierce-Arrow, Chalmers, Hupmobile; Van Winkle Truck Co., Van Winkle commercials; International Harvester Co., International commercials; Standard Auto Co., Paige-Detroit pleasure cars and Selden commercials; Bower & Houser, Oldsmobile and Regal; Ford Motor Co., Ford; Bussey & Steel Co., Premier; Johnson Motor Co., Stevens-Duryea, Lyons-Knight, and Chase commercial cars; W. H. McIntyre Co., Imp cyclecar; Mitchell Sales Co., Mitchell; Cole Motor Car Co., Cole; J. I. Case T. M. Co., Case; Velie Motor Vehicle Go., Velie; K. T. McKinistry, Ohio electrics; Buick Motor Co., Buick; Oakland Sales Co., Oakland and Krit; W. C. Mahoney, Cartercar.

Accessories: R. N. Reed, lubricants; Johnson-Gewinner Co., supplies; Howe Rubber Co., Howe tubes and casings; Chas. E. Miller, supplies; Atlanta Automobile Top and Trimming Co., tops and materials.

Here's a Flexible End Ratchet Wrench.

Adapting the pipe wrench principle in a brand new way, a French accessory maker has succeeded in producing an exceedingly



"LE POIGNE" RATCHET WRENCH

unusual type of wrench which has a number of more than ordinarily interesting characteristics; the wrench itself is illustrated herewith and it is styled "La Cle Poigne." The most unusual part of the wrench is that instead of having solid ends like an ordinary spanner, it has very flexible ends and these ends wrap themselves around the nut and grip it with a grip that is unbreakable. Just how the wrench looks before it is applied and after pressure is put upon it, is shown by the pictures. Several advantages are claimed for the construction, not the least important of which is that it is impossible for the wrench to injure a nut, no matter how many times it may be used upon it. The wrench is made in the several sizes that correspond to the sizes of ordinary wrenches and is double ended. The end of the wrench which wraps around the nut is spring steel and as it releases instantly pressure is removed from the end of the wrench, the operation is in effect the same as that of a ratchet wrench.

Emergency "Gas" Supply for Foot-Stool.

Probably there are few persons ingenious enough to imagine that gasolene may make a very good foot-stool for the tonneau of a car—that is, provided the gasolene is in a stout tin with a tight cap. And if it is in a tight, strong tin, there is small likelihood that the driver will have to trudge a couple of miles because his tank had run dry.

DISAGREE WITH THE BOSS? YES, BUT DON'T FIGHT HIM

In Last Analysis Man Who Pays the Salary Should Have Things His Way—One Man's Method of Having "His" Way.

Do you always agree with your boss? You do? Does he think any the better of you for it?

"But," you say, "he's the boss; shouldn't I do as he says?"

Certainly you should; but that doesn't imply that you should always agree with him. And more important still, it doesn't mean that you should always be fighting against the things he wants. In the last analysis you should do pretty nearly what he wants if you are going to take his money. But "handling the boss" is a little science by itself.

It is almost axiomatic that too many bosses resent the presentation of suggestions, and with this type of superior, men have cleverly evolved ways of slipping in their own ideas in such a manner that when the boss finally wakes up to them they appear to him as a great discovery of his own. The boss who welcomes and honestly accepts or rejects suggestions is one of the bright spots in the business world, whereas others have to be "handled." But even at that, if the man who pays the salary wants it done "this way" and is sure of it, that should be final.

"The last advertising manager I had was a stickler to argue. He would go to the mat over the least thing, and to get anything done my way meant a long, hard fight," says a contributor to Printer's Ink. "After a time I got tired of this continual warring. I was paying the bills, and regardless of opinions was entitled to say how my money was to be spent. Understand, I don't mean to say I want men without opinions, but I do expect my advertising manager to submit to my judgment. That was a thing this one wouldn't do, and so the inevitable happened—we parted.

"As his successor I appointed a young fellow who had started with me as a bundle wrapper, and had risen to assistant advertising manager. He had never been a great success as a salesman, evidently lacking some essential, but he was naturally adapted to advertising, and since taking charge, is getting wonderful results. I often notice the way this man handles me. He once told a friend of mine that he believed it just as important to study the market where he sold his services—the boss—as it was the market where he sold

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his product. And he carried out his plan by studying me.

"When I give this young fellow some idea and tell him to work up a page ad. he doesn't begin to argue about better ways to do it, but goes ahead and does it. When he shows me the copy I generally notice that what I thought was a great idea is buried somewhere in the ad. with his own evolution played up in the scare lines and illustrations.

"But he gets it in somewhere, and of course I am satisfied, as I can generally see where his ideas are an improvement over mine. On the other hand, if he were to combat my idea and try to prove to me how much better his were, as his predecessor used to do, naturally I would have to maintain my position and a useless and energy-wasting argument would result."

What the Car Owner Couldn't Understand.

It seems hard to believe that the man who first made the now famous remark to the effect that consistency is a jewel knew nothing about automobiles, for there seems to be more downright, hard-headed—— But here's the yarn, which speaks for itself very well.

Three scribes who had nothing to do but write things about automobiles were busy doing so one fine day when in walked a car owner who had acquired that title only a month previous. Now, it happened that one of the scribes had spent long, weary months in an automobile factory; another had owned, operated and more or less desiccated several machines, while the third had spent a day explaining the how and why of the car to its owner, showing him how to distinguish the rear axle from the gearcase, etc. And the proud proprietor, dropping in to ask for further enlightenment, took a chair with the remark:

"Gee, but it seems funny for you fellows to be sitting here all day and writing about automobiles! I suppose you don't see as much of the insides of cars as us fellows who have machines, do you? I don't see how you do it."

Verily, consistency is a jewel.

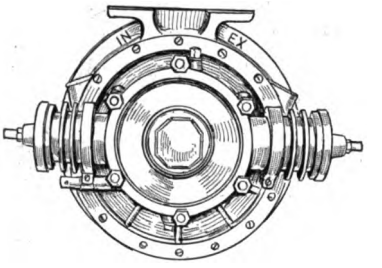
Why Electric Signals Should be Cleaned.

Although electric signalling devices are supposed to be watertight, not all of them are as tight as might be and, in consequence, it often is possible to improve their tone considerably by removing the diaphragm and smoothing the rust off the rotor with a fine file. A small quantity of vaseline applied before the diaphragm is replaced will postpone the formation of more rust. Incidentally, horns which do not operate freely consume considerably more current than they would normally consume.

UNIT POWER PLANT SYSTEM IN COMPRESSED AIR STARTER

Thurber Rotary Starter Now Has Air Pump and Air Motor Mounted Together—Gas Engine Practice in Pump Construction.

Because electricity is the most conspicuous form of energy for replacing hand cranking, it does not by any means follow that it is the only form of energy that is valuable for this purpose, or that it is the only power that has received thought and study. Compressed air, for instance, not only is available, but its use has been developed scientifically and practically, as was clearly set forth in the July 24 and July 31 issues of Motor World, in which various



THURBER COMPRESSOR-MOTOR

types of compressed air starters were illustrated and described. Among them was the Thurber starter, manufactured by the Thurber Rotary Starter Co., of Detroit, a device which has not a little to recommend it.

Since the publication of the articles referred to, however, the Thurber starter has been considerably improved and not a little simplified. Briefly, the apparatus consists of a rotary motor of the vane type, the construction being analogous to that of the sliding vane water pump, though necessarily the motor is more accurately and carefully built. The motor is placed at the forward end of the crankshaft, connection being made through a planetary gearing enclosed in an extension of the motor casing. A power-driven air pump, charging a high-pressure air receiver, supplies the necessary air, which is delivered to the motor through heavy piping and controlled by a foot-operated valve.

While in the latest type of starter the rotary motor is practically unchanged, a new pump has been designed and a new driving system evolved. The old pump was a four-cylinder machine driven by chain from the engine, and was located wherever it could best be put, without reference to the position of the starting motor. Now, however, the pump is of the opposed type, having two cylinders, and is mounted as a unit with the rotary motor; the pump forms the front part of the combination. The functions of the pump and the motor are controlled by clutches. The motor clutch is automatic; when the air is turned on by pressure on the foot valve the clutch automatically takes hold and the engine shaft is placed in driving connection with the starter; when the engine starts the clutch automatically is disengaged. The pump clutch, however, is engaged by pressure on a pedal when the air gauge on the dashboard shows that the pressure, which normally is about 250 pounds to the square inch, is getting low. It is stated that ordinarily five minutes pumping during the day is sufficient to keep up the supply, and that the system does not leak, but will hold air almost indefinitely.

The pump is designed along gas-engine lines and is particularly well provided with bearing areas; the makers state that it is so quiet in operation that it cannot be heard running, no matter how high the pressure. The starter is unusual in that it will turn an engine over at exceptionally high speed. The makers state that a 40-horsepower engine can be "spun" at 400 revolutions per minute, which is fast enough to start a motor under any conditions under which starting is possible at all. For use when the tank is empty, or for starting when the starter is inoperative for any reason, the hand crank can be applied by removing a cap at the front of the unit.

Vaughan "Six" Makes its Appearance.

The long expected Vaughan "Six" at last has appeared; it has been on private exhibition all week at the Hotel Astor, New York. The car is the product of the Vaughan Car Co., of Kingston, N. Y., which was incorporated early this year with a capital of $1,350,000, and of which A. B. Cordner is president, Orlando F. Weber vice-president, H. W. Johns treasurer, E. S. Partridge secretary and Chester Griswold engineer. The car is an appealing, large one with a wheelbase of 138 inches and a block-cast motor with a bore and stroke of 3¼ x 5½ inches. The touring body is of the pronounced stream-line type with tapered hood and narrow radiator; the smoothness of the lines is enhanced by the absence of side lamps. Springs are long and unusually flexible, those in the rear being of the ¾-elliptic type. Gasolene feed is by pressure, the tank being in the rear.

Willys Adds 1,640 Dealers During Year.

According to official figures made public by President Willys, the number of Willys-Overland dealers increased during the present year 64 per cent.—from 1,843 to 2,843. In 1911 the number was 1,514.

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LLUSIONS DEVELOPED BY PAINTS OF DIFFERENT HUES

Why Some Colors Make Cars Appear Larger and Other Colors Smaller Than They Are—Paint Compounding Secrets.

Probably there are not a great many persons who realize that the color a car is painted has a direct effect in influencing the apparent size of the vehicle; that bright reds, for instance, make a car appear really larger than it is; and that the less flashy dark blues and greens and blacks have the effect of slightly reducing the size of the car to the eye. But that this is true is the disclosure of a paint expert who has made a study of colors both as regards their effect on the eye and their construction, or rather compounding, and their manner of finish. His instructions, too, for the choice of colors for wearability, are worthy of consideration.

Practically all of the greys, he says, are neutral in their effect upon the surface—that is to say, they exert no increasing or diminishing effect upon the surface to which they are applied. They are neither cold nor hot in respect to their effect upon the senses, as seasons come and go; they are virtually all-the-year-round colors. They show dirt and surface blemishes less than most other colors, and if applied skilfully they wear well. All of the greys are comparatively easy to apply. Their wearing strength comes from the white lead in their composition. These grey pigments, moreover, in the matter of cost compare favorably with the cheapest of the other colors.

Reds, and notably the light reds, have the effect of increasing the actual size of the car to which they are applied. They have a warm effect in winter and a correspondingly hot effect in summer. While such flaming reds as English vermilion wear durably when given exceptionally good care, the rank and file of these fiery reds fade and lose their original brilliancy after a little time.

Greens and blacks have a diminishing effect upon the surface, but require perfection in surfacing methods, as they show surface defects more freely than other colors. They are, nevertheless, durable colors if kept secure under a strong body of varnish. All of the dark, fine greens, of which there is a noble array, are colors of elegance and refinement.

The brown pigments, of which at the present time there are numerous very beautiful shades, are neutral colors in respect to the seasons. They are durable under conditions which would upset not a few other pigments, do not show surface defects readily, are easy to produce on the surface, have strong covering power, show dirt and road service to the minimum extent, and stand up well under cleaning and renovating processes.

There are many splendid aristocratic lake pigments, which fashion has decreed to be popular for this and, perhaps, succeeding seasons, which are durable under good care, but which the car owner who elects to paint his car is quite certain to have trouble in handling. They are colors which require as perfect grounds as is possible. They are absolutely negative in their effect upon the dimensions of the car, and for brilliancy of color, without being in the slightest degree sensational, are unsurpassed.

Although the blues are meeting with such general favor, they are not, for the most part, colors easy of application. The light blues are less befogged and discolored under varnish, gases, and atmospheric impurities than the darker shades, but all are subject to effects which ordinarily do not disturb most of the other staple pigments. At the same time the blues, almost without exception, are to be accounted durable colors, and when kept well protected under varnish will wear on and on, and have a show of the aristocracy to the end. Surfaces of dark blue appear perceptibly smaller than they really are, while the lighter shades of the color exert a neutral effect.

The yellow family of pigments is not so much in evidence on the motor vehicle as formerly, being hard colors to bring out to a finish. They show surface defects plainly, but if maintained in good shape during surface will wear durably.

White lead, a pigment known throughout successive generations as a wonderfully-enduring substance, forms the basis of yellow. Colors compounded from the old-time Dutch-process white lead are certain to result in good pigment. For this reason greys and yellows, and all the blended pigments between these two, are entitled to the distinction of being raw-hide wearing mediums. They require plenty of time to dry—that is assured; and if denied this, they create surface disorders not easily remedied.

The greys and yellows and their intermediate colors reflect the light and heat better than dark colors, and, consequently, if brought up right, fade less. The dark colors invariably absorb more heat than light ones. They also appear to lower the height of the vehicle to which they are applied.

As a matter of information helpful to the car owner in choosing a color for his car it may be stated that the basis of the green pigments is potash, sulphur, chromic acid, copper, arsenic, and verdigris, combined and varied in methods of manufacture to produce incomparably beautiful effects. Possibly, however, many of the popular greens of the present day contain only a limited percentage of the above ingredients. White, yellow, prussian blue, chrome green, golden ochre, burnt umber, and black all contribute more or less to the composition of automobile greens.

Going back into the realms of chemistry, the base of the blues—ultramarine blue being the grandfather of the family—is silica, alumina, soda, sulphur, and sulphur oxides. Methods of manufacture are too intricate for the lay mind fully to comprehend them, but of this the car owner may be assured—that the various shades of color derived from the above ingredients, and compounded, in some instances, with white lead, are permanent, and endowed with excellent color-retaining and wearing properties.

Foreign Revival of an Old Idea.

The rather old idea of having rigid connection between the motor and the live rear axle casing of a car has been revived abroad in a light tractor recently brought out. The motor and gearset are built on the unit plan, and from the rear of the gearcase to the axle casing extends a steel tube of very large diameter, in which the propeller shaft runs. Thus there is no possibility of any of the working parts, whether in the motor or the transmission system, getting out of alignment unless it is through some abnormal strain such as might be caused by a collision or other accident. The tractor is known as the "Simplicia" and is said to operate successfully. The same construction was employed in an American car a good many years ago; incidentally, the machine, which was built near Boston, had three cylinders and make-and-break ignition and had a life that was neither long nor merry.

Too Heavy for the Turntable.

The strength of a given appliance depends largely upon the point of view of the user. For instance, if a man buys an automobile turntable and uses it, as the maker intended it should be used, for pleasure cars, there is reason to feel confident that nothing will break or give trouble within a reasonable time, at least. But from the point of view of the driver of a great, big motor truck the turntable is a rather flimsy thing. At least, these are approximately the sentiments of a garage owner who installed a very fine table only to have it practically wrecked by the passage over it of a six-ton motor truck, which imposed a far greater strain than the little merry-go-round could stand. The moral is perfectly obvious.

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RECENT DEVELOPMENTS in ACCESSORIES

"Ambulance" for Injured Automobiles.

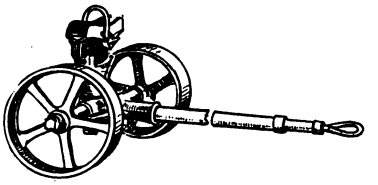
When an automobile loses a wheel, or has one or more wheels put out of the running through accident or internal derangement, it is about as helpless a thing as there is on the road. Under most circumstances a car so crippled is rather difficult to assist, and for this reason various devices are made to temporarily replace wheels that won't roll or that are not there. The Weaver Mfg. Co., of Springfield, Ill., has carried its ideas further than most people in this direction, and has brought out an "ambulance" that seems capable of valuable service under almost any of the conditions that render a car temporarily useless.

As the accompanying illustration makes clear, the "ambulance" consists of a pair of wheels, which are mounted on a steel axle 1¼ inches in diameter, with a long tongue. On the axle is mounted a saddle upon which the axle or other part of the disabled car may be clamped. For use under the front axle, where there is but little variation in construction in different cars, there is a screw clamp, while for attachment at points where the clamp cannot be used provision is made for the use of a rope for binding. The saddle is of heavy malleable iron and the tongue of steel tubing and telescopes so that its length can be adjusted to suit the conditions. A key running through holes provides a simple and secure fastening.

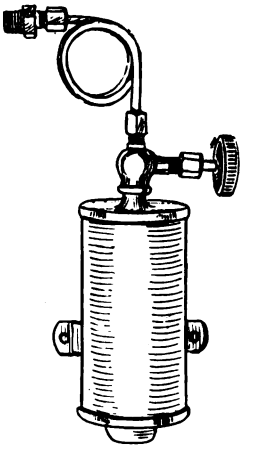
The "ambulance" can be put under a front or rear axle if both wheels are gone or disabled. The tongue can be carried forward and attached to the towing vehicle, or it can be secured to some part of the disabled car itself, if necessary, the telescoping tongue facilitating this arrangement. One man can take the device and without assistance get it under a car and bring it into the shop with less loss of time than two men could do it without such efficacious apparatus. The tires are broad—3 inches—and the whole thing weighs 100 pounds.

Pierce Develops New Motor Controller.

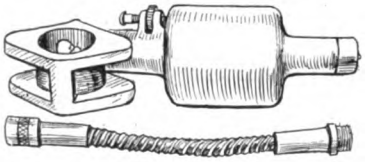
Working along lines that are similar, in some respects, to those followed in developing its speed controller, the Pierce Speed Controller Co., of Anderson, Ind., has evolved a motor controller embodying several features that are out of the usual and that are of distinct utility. The speed controller, which was described in detail in Motor World when it first made its appearance, has for its object the direct control of the speed of the car, and consists of a motor governor operated through a flexible shaft geared to one of the road wheels. The motor controller, however, is designed



WEAVER AUTOMOBILE AMBULANCE



IDEAL DASH PRIMER



PIERCE MOTOR CONTROLLER

to limit the maximum motor speed without reference to car speed, and therefore is driven, also by flexible shaft, from some rotating motor part, which may be the crankshaft, a camshaft, or the pump shaft; or it may be run from some part of the gearset.

While the centrifugal principle of operation adopted for the speed controller is adhered to in the governor, the latter is constructed to run in a horizontal position, the controller being vertical. The device acts on the throttle and is fitted with an adjusting device that permits setting for any desired number of revolutions and which can be sealed with a wire seal to prevent tampering. The application of the governor does not require any special provision in the construction of the motor. It can be applied to any motor at any time and can be removal even more easily, so that in case repairs are required, or for any other reason the removal of the governor should be desired, it can be effected without in any way interfering with the operation of the motor. The speed controller, incidentally, has undergone no changes during the past year, indicating that its design and construction have been found thoroughly satisfactory.

Develops Simple Manifold Priming Device.

One of the effects of the motor starter and other labor saving devices that now abound on automobiles has been to make people dissatisfied with the old method of lifting the hood, opening the petcocks and squirting in gasolene with an oil can when the motor has to be primed. So the accessory manufacturers have come out with variout easy-to-use primers, one of the most recently devised being that of the Ideal Brass Works, of Indianapolis, Ind. The accompanying illustration shows all there is to the primer—a little tank, 6 inches high to attach to the dashboard, a needle-valve, 26 inches of copper tubing and a threaded connection for the intake manifold. To prime the motor all that is necessary is to open the needle valve slightly and crank. After cranking the valve is closed. The whole outfit weighs but a pound and the price is $2.50, finished in nickel, polished brass or gun metal. It has the advantage that, as it injects gasolene into the manifold, all the cylinders are primed at once, and the priming may be regulated.

Cars Exported by the Bushel!

Automobiles by the bushel! It unquestionably sounds funny, but that is the way the French government, which means the French customs officials, make public export figures. For instance, during the first nine months of the current year 182,000 bushels of motor cars were exported from France. From which it is evident that automobiles are represented as being dealt in by the bushel.

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DIVERSITY IN RECEPTACLES FOR OILY WASTE

anger That Lies in Oil-Soaked Rags and How it May be Averted—Meaning of "Spontaneous Combustion" Made Plain—Properly Constructed Cans with Which the Garage Proprietor can Protect Himself.

What do you do with your oily waste?

Don't drop it on the floor. Don't pitch it into a corner. Don't chuck it into an open container of any kind. Never keep it in an empty soap box, or any other kind of a box. It is more dangerous than gunpowder, for it will "go off" without the slightest provocation, without intimation and without conscience; gunpowder won't; it needs at least a kindling spark, a start in life, so to speak. Besides, you can keep gunpowder in 'most any kind of a container and it will be safe, provided the man who rocks the boat is not near with a lighted cigar.

But you cannot keep oily waste in any old kind of a container—that is, with any degree of safety or peace of mind. In the first place, it is just plain pestiferous; it is likely to burst into flame at any instant of the day or night; it cannot be trusted alone. There was a garage proprietor—note the "was"—who thought he could trust his oily waste all alone because it was in a sheet iron can. But the can had no cover and waste "went off," which is to say, it became ignited through that curious action which chemists and others style spontaneous combustion, and not very long afterward nothing of the garage remained but the memory of it and a cloud of heavy, black smoke.

Spontaneous combustion, in the words of those who explain it, is a "phenomenon that occasionally manifests itself in mineral and organic substances. The term refers to the smoldering or inflaming of a substance apparently without the intervention of any external heat. Generally it is due to a process of slow oxidation which ultimately results in the evolution of sufficient heat to raise the substance to the temperature of ignition." Which explains, quite nicely, the reason why oily waste will, if left alone, begin first to smolder and finally to break into flame.

The second reason why you cannot store oily waste in any old kind of a container—maybe it ought to be the first reason—is the fire department will not permit any old kind of a container or no container at all. The fire department knows all about the perversity of oily waste and consequently it has laid down inviolable rules governing the disposition of such dangerous material. The rules of the Bureau of Combustibles of the Fire Department of the City of New York as set forth in section 28 of Part X, and covering "Waste Cans," are as follows:

What the Fire Department Says.

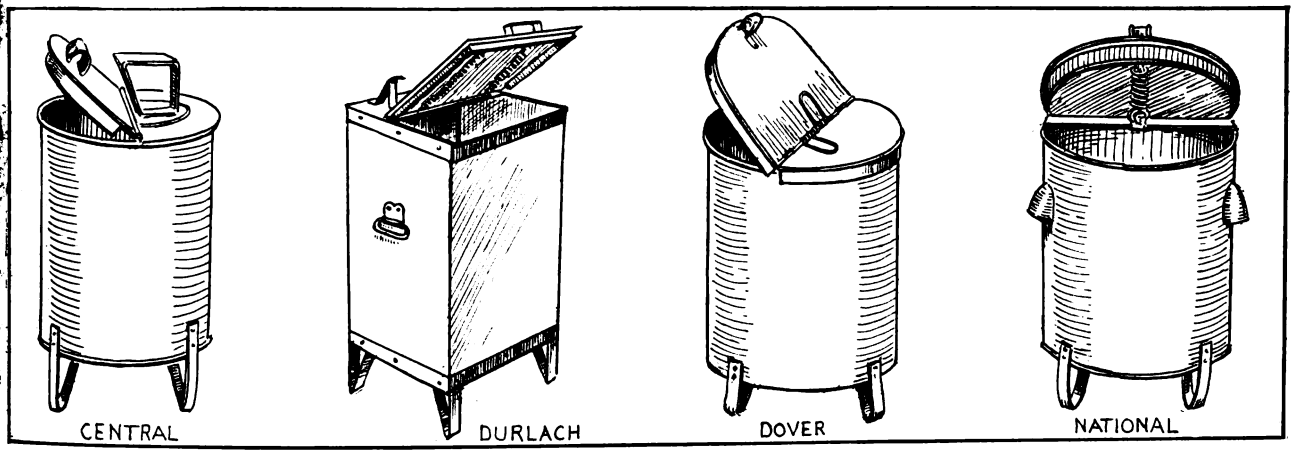
"Self-closing metal cans set firmly on four-inch legs shall be kept on all floors for the purpose of holding all inflammable waste material."

The conditions are easy to comply with, and though it would seem that a can is a can the world over and that not a very great deal of variety in construction is possible, such is not the case, in part, at least. A can may be a can, but it also may be a can of any number of different kinds, and it probably would surprise the average person to know of the variety that exists in such palpably plebian articles of commerce and convenience.

The conditions say nothing whatever about the use of solder in the construction of a can, though it is obvious that if the joints were soldered and the waste became ignited the heat would "open the seams" in short order. Hence, no approved types of cans have soldered joints. Rivets take the place of solder. Similarly, there is nothing in the regulations which prescribes the method by which the can must be made self-closing. But springs are such an obvious solution of the problem that no one has seen fit to search further; there has been no need to do so, in fact.

The Dover Stamping & Mfg. Co., of Cambridge, Mass., which produces Dover specialties, including gasolene cans of every kind and description, to say nothing of a complete assortment of funnels, measures and other such things, also produces oily waste cans quite as a matter of course; one of them is illustrated herewith with a number of others of different makes, the group serving to convey some idea of the variety in construction that obtains.

The Dover can is not unlike other cans, insofar as the can part of it is concerned. It is strongly made of galvanized sheet iron and is supported the regulation four inches



FOUR DIFFERENT TYPES OF SELF-CLOSING OILY WASTE CANS SUITABLE FOR GARAGE USE

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from the floor by means of strap legs which are securely riveted in place. The cover is tight fitting and overlaps the edges of the can; it is spring closed, the arrangement of the spring and its method of attachment being best made plain by the picture.

Round Cans and Cans with Corners.

A word with reference to the necessity for supporting such cans at least four inches from the floor: Fire within the can might quite easily raise the temperature of the bottom high enough to ignite the floor, provided it were a wooden one, if the can rested directly on the floor. The air space acts as sufficient insulation to eliminate the possibility of anything of the kind.

Oily waste cans generally are round, the reason being that such construction is simple and because it is simple it is comparatively cheap. I. Durlach, of 199 Wooster street, New York City, however, produces both round and rectangular cans, both of which types are illustrated herewith. In one respect the round can has an advantage over the square one in that it is impossible to place the round one in a corner made by two walls and have its sides touch the walls closely enough to raise the danger of fire. The sides of the round can would touch the wall, of course, but the line of contact scarcely would be sufficient to represent a very great hazard. Hence, where a square can is used and the walls are of some inflammable material, care must be taken to see that it does not touch them. Where the walls are of concrete or some other noninflammable material, the square can, which will have greater capacity for the floor space occupied than will the round one, can be used without danger of fire. It is always advisable, however, to make certain that any kind of a can, square or round, has plenty of "breathing space" on all sides of it.

Automatically Closing Covers.

The Durlach square can and the round one do not differ materially in construction —except as regards their shape, of course. In both cases, the material is heavy galvanized sheet iron and both cans are made in a variety of sizes ranging from 16 inches square by 24 high to 20 inches square and 36 inches high for the one and from 15 x 24 inches to 20 x 24 inches for the other. The method of ensuring the closure of the can is the same in both and is dependent upon a heavy coil spring in one and on two springs in the other. To obviate the possibility of the cans being left open, the tops are fitted with stops which prevent the lid being lifted beyond a certain point, the lids therefore always being under the influence of the springs.

In the illustration of the Central oily waste can, which is produced by the Central Stamping Co., of 172 Fulton street, New York City, the stop that prevents the lid being lifted more than a certain distance is shown quite clearly; the stop, by the way, serves, too, as a convenient handle for moving the can about from place to place. The can itself, like the others, is made of heavy

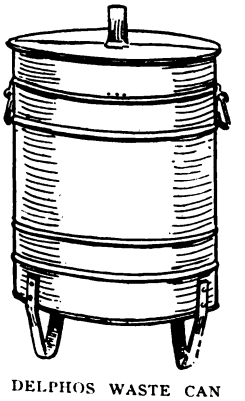


DURLACH ROUND TYPE

galvanized sheet iron in a variety of sizes, the smallest measuring 10½ inches in diameter and 15½ inches in height and the largest measuring 17 inches in diameter and 28 inches in height.

Cans that Have Handy Handles.

Not all oily waste cans are fitted with handles, for most of them are light and are



DELPHOS WASTE CAN

easily moved about. Nevertheless, it is conceivable that in case of a brisk fire within one of them handles would be mighty handy things to have. All the cans produced by The National Enameling & Stamping Co., of 374 Broadway, are equipped with handles, as is made plain by the accompanying illustration. The picture also shows quite clearly the method of attaching the coil spring that slams the lid down every time some one attempts to leave it open intentionally, or, as more often is the case, unintentionally. The lid, as is shown by the illustration, is arranged to fit snugly and the can rests on the regulation four-inch strap iron legs. Several sizes are made, the smallest measuring 11¼ x 15 inches and the largest 24 x 36 inches.

Delphos oily waste cans, which are manufactured by the Delphos Mfg. Co., of the Ohio city for which the company is named, do not differ materially from any of the others and, like them, are produced in several styles ranging from a small bench can measuring 12 x 15 inches to a full-sized garage can measuring 15 x 20 inches. In this respect, it is worthy of passing note that waste cans seldom are made in very large sizes. It is generally conceded to be better practice to equip a garage with several small cans of the aggregate capacity of a single large one. Obviously, the larger the can the larger will be any fire that starts, and it is infinitely easier to move a hot small can than a hot large one.

The Delphos can is made of 26-gauge galvanized iron sheets seamed together and having bales rolled into the material to increase the strength. By way of enhancing appearance, they are belted top and bottom with broad bands of enamel, and they stand on substantial strap iron legs of the usual type. The cover is held closed by a spring and handles are provided.

Determining Proper Battery Capacity.

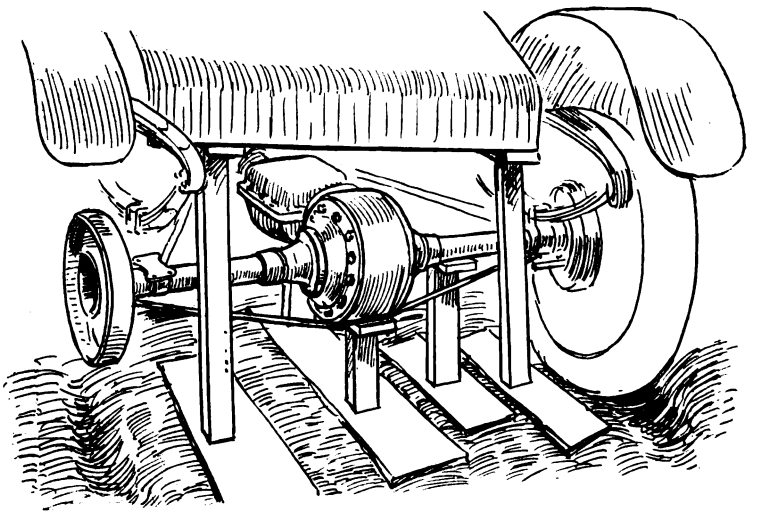
To those who would convert existing lighting systems from oil or acetylene gas to electricity, the biggest part of the problem as often as not is the determination of the proper size battery to instal. The first consideration, of course, is to determine the voltage and, in this connection, a six-volt system undoubtedly is the best for the purpose because the battery then will be comparatively light and the extreme care in wiring that is necessary with much higher voltages will not be required. The next step is to determine the amount of current the battery will be required to deliver, and this can be done very easily by multiplying the total candlepower of the bulbs by the constant 1.25 and dividing the result by the voltage. Thus, if two 21-candlepower head lamps, two 4-candlepower side lamps and a 2-candlepower tail lamp are to be supplied, the total candlepower, multiplied by 1.25 and divided by 6 will equal 10 2/3—the number of amperes current required to light all the lamps at the same time. Obviously, it is not always necessary to have all lamps lighted at the same time, and this should be borne in mind when figuring the capacity of the battery. The formula is correct only for Tungsten lamps. Carbon lamps should not be considered, for they take about three times as much current as Tungstens.

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JACKING UP THE REAR END LOOKED SIMPLE BUT WASN'T

Preliminary Tribulations of a Fledgling Car Owner—Replacing an Axle Shaft Easier Than the Process of Making Ready.

Joes had a new car. That is to say, it was new to Jones. In the abstract it was a second-hand car, but as Jones never had owned an automobile of any kind before, it was new to him. In fact, it was painfully new. Every time the motor failed to start after a reasonable number of turns of the crank Jones's heart sank, for he was all at sea. Fortunatealy, the machine was in good condition, and did not develop any



BLOCKING UP FOR REMOVAL OF BROKEN AXLE SHAFT

real troubles—at first. It only scared Jones half to death. Confidence came with familiarity, however, and Jones soon became bold enough to defy the Jinx and curse the car when it acted a little bit contrary.

One sad, sad day Jones, with the pride of ownership upon him, invited Smith and Smith's family out from the city to his suburban home to spend Sunday, and explore the surrounding country in the car.

"No use your paying train fare for the whole distance," said Jones. "I'll meet you at a half-way point—say Brownsville—and take you the rest of the way in my car."

So Smith and his tribe left the train at Brownsville and admired the scenery for half an hour, at the end of which time a 'phone message to Jones's house brought out the distressing fact that the car was stuck somehow, somewhere; and so all the Smiths got on the next train and trooped up to the Jones house. The car was standing on the lawn. To be strictly correct, the car was in the lawn, for it had rained hard the day before and the ground, naturally soft, was made softer, and when Jones in a rash moment attempted to turn around on the grass the wheels went in almost to the hubs. The machine was surrounded by an interesting anl instructive litter of planks, poles and other appliances pressed into service as means for extracting the machine from the mire.

"Why yes," said Jones. "She's stuck in the ground, but I guess I could get her out if I could get any power in the wheels. I can't drive the wheels."

Investigation developed the fact that while trying to pull out of the lawn on low gear Jones had heard something snap, and thereafter the rear wheels took no active part in the proceedings. Smith had been through the mill that grinds out trouble, and, borrowing Jones's third worst suit of clothes—Jones was wearing his fourth worst—sallied forth to do what could be done. The car had a semi-floating rear axle with the three-speed selective gearset mounted as a unit with the axle casing, and there were two universal joints, one at the rear of the clutch and the other just forward of the gearbox.

"Something's busted in the gearbox," mourned Jones. But examination revealed nothing visibly or feelably wrong in the gearbox, and the transmission system up to that point was intact. Jones said he had tried to hoist the wheels out of the mud—but he hadn't thought of giving the jack something to stand on, so that he had good grounds for his complaint that the jack went down before the car went up. A plank under the jack provided a footing and one wheel—it happened to be the left—was jacked up, the axle blocked while the jack was given another "bite" and the wheel lifted clear of the boggy turf.

"Let's see if this will tell us anything," said Smith. Laying hold upon the wheel, he gave it a tentative shake, and it wobbled. Another and more vigorous shake, and the wheel came away in his hands and plopped down into the rut whence it has been jacked, with a splash that would have spoiled Jones's third worst suit if it hadn't already been spoiled. The driving shaft was broken off short just where it entered the hub, and an oil-blackened and partly rusted area showed that a crack had existed for a considerable time, leaving about half of the shaft area to carry the load. Naturally the crack was waiting only for a favorable opportunity to extend through the rest of the shaft, and the strain of the low gear pulling against the mud was quite sufficient.

Had the inner end of the driving shaft been squared and merely slipped into a square hole in the differential gear the ensuing job would have been easy, for the repair would have consisted of pulling out the broken shaft and pushing in a new one. But the shaft was keyed in the differential as well as the hub of the wheel. So there was nothing for it but to take down the axle. The first thing to do was to jack up the rear end properly, and this proved to be an undertaking of unexpected complication, from Jones's point of view.

"Well," said Jones, "we've got the axle jacked up. I suppose the next thing is to take out these bolts," indicating the bolts holding the left side of the axle casing in place.

"Observe," said Smith, "that the weight of the car is on the springs, the springs rest on the axle and the axle on the jack. Now, if you take the bolts out there won't be anything——"

"I get you," interrupted Jones. "What do you have to do?"

"Take the weight of the car off the axle by blocking up the body. Put blocks under the rear end of the frame, and your axle will have only its own weight to carry."

This was done by jacking up the axle till the body was quite high and then putting blocks under the rear frame corners so that when the jack was let down the weight came on the blocks. Jones, wrench in hand, made for the middle of the axle again, but once more Smith held him up.

"If you take out those bolts now several things will happen. Your left spring still is bolted to the axle and the brake rods are connected. There is nothing to support the middle of the axle, so that if you disconnect it the weight of the gearcase will pull it down and the springs will hold up the ends and you'll have a grand mess."

"Gee! It sounds easy enough to talk about jacking up the rear end," sighed Jones. "But it's some job."

The upshot of it was that everything that

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was connected to the left side of the axle casing was disconnected — the spring, which was cast loose by taking the four bolts off the clips; the emergency and service brake rods, which were held by pins passing through yokes and prevented from slipping out by split-pins, and the radius rod, which was fastened in the same way but by a much heavier pin. Then a block was placed under the right side of the axle, close to the differential housing, and another under the gearcase. This left the left arm of the casing entirely free, carrying nothing but its own weight. The outer end of the truss-rod passed through a hole in the brake drum, inside of which it was held by a nut which, removed, left everything clear.

The reason for blocking the axle to the right of the differential housing instead of directly under the housing was that the housing and the two arms through which the driving shafts ran were three parts connected together by through bolts, so that taking off the left casing would necessarily result in loosening up the whole axle casing structure. Thus it was necessary to provide individual support for each part. Once this was done it remained only to take out the bolts—a sufficiently "mean" job, taking into consideration the tight split-pins and the difficulty of getting the wrench into the recesses in which the nuts were half buried.

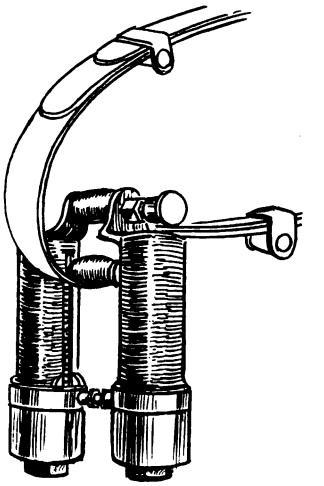
The casing removed and slipped off over the broken shaft, the shaft itself had to be removed, and this necessitated the removal of the left half of the differential, carrying with it the big bevel driving gear. The shaft was held in the differential by a nut on the inside and prevented from turning by two small keys which came out when the nut was slackened and the shaft gently driven back. The old nut and the old keys answered for the new shaft, which was put in, the differential casing re-assembled, the axle casing slipped back in place, bolted up and connected up to the spring, radius rod and brake rods, the truss-rod nut screwed on and finally, the wheel slipped over the tapered and keyed projecting shaft end and pulled home with the nut, which was protected by the usual split-pin. The last job was the screwing on of the brass hub-cap, after putting in a good supply of fresh grease.

This was not quite the last job, either, for the car was still in the lawn. But by the time the work was done—and it took considerably longer than it takes to tell of it—the ground was dry and comparatively hard; a couple of planks under the rear wheels made a track, and the machine, once more able to help itself, was easily pulled onto the little road that led to the little garage. It is more than likely that the owner will "keep off the grass" hereafter. He's an optimist, in his way, though, and after all the unpleasantness of the matter was over he sensibly took a cheerful view of the situation.

"Well," he remarked, as he locked the garage door, "it's all-fired lucky that shaft didn't break when we were chasing along the road 15 or 20 miles away from home and the garage at about 40 miles an hour." And it was.

Sager's Newest Shock Absorber.

It is a long, long time since J. H. Sager & Co., of Rochester, N. Y., began making shock absorbers of the auxiliary spring type, and therefore they have had not a little experience in that branch of the accessories business. For this, if for no other



LATEST J. H. S. SHOCK ABSORBER

reason, it is quite reasonable to believe that they know whereof they speak when they say that their latest product in this line, the J.H.S. shock absorber, is by far the best they have devised, not only in efficiency but in durability.

The accompanying illustration shows clearly the outward appearance of the appliance in the form in which it is used for three-quarter elliptic springs. For full elliptics, half elliptics and platform springs the same double unit design is employed, springs of Ford cars and for some types of but the brackets and lugs are arranged to suit the different conditions. For the half elliptic springs single unit types are built with suitable brackets for attachment.

The fundamental idea of the device is that it must be sufficiently sensitive to take up vibrations that are too rapid to be absorbed by the car springs proper. With this end in view there is employed a combination of coiled springs with cylinders and pistons. There are no small, delicate parts that are liable to get out of order; it is said that cars have been run for some 10,000 miles without affecting the efficiency of the shock absorbers.

When Imposter "Sticks" Dealer.

If an imposter named Jones represents himself as a millionaire named Smith, succeeds in convincing a dealer that he is Smith, obtains a car on credit and sells the car to an innocent purchaser named Brown, who is "stuck"—the dealer or Brown? The dealer, so the Appellate Division of the Supreme Court of New York held last week, must stand the loss.

In the case in question, one Gwynne represented himself as Baldwin J. Gwynne, of Columbus, O., and sold to a man whose name may be White a quantity of jewelry. White paid by check. When Gwynne went to Jules S. Bache & Co., bankers, in New York City, to get the check cashed, White identified Gwynne as Baldwin J. Gwynne, the man named in the check. Subsequently the bankers identified Gwynne to some jewelers as Baldwin J. Gwynne, and since this latter was well rated in Dun's and Bradstreet's the jewelers sold him $838 worth of jewelry on credit, which jewelry Gwynne sold to Dennis C. McQuade for cash.

A lower court directed judgment for the jewelers as against McQuade, but the Appellate Division directed a reversal on the grounds that title to the jewelry passed from the jewellers to Gwynne and therefore became legally vested in McQuade. It was held that the offense did not constitute larceny.

Finds Used Car Buyer in Rogues' Gallery.

When "George Lambert" failed to pay the first monthly instalment on a used car he bought from Mrs. George H. Barrett, of New York City, she asked the police what she had better do; they asked her as a preliminary move to look over the faces in the rogues' gallery, and she was somewhat surprised when she recognized the picture of a white-haired, soldierly-appearing man as that of the one to whom she sold the car. He had paid a cash deposit of $100.

His manner was straightforward and trustworthy, but that did not prevent his being held in $3,500 bail after the police located him in a hotel. He is said to have served a total of 11½ years in penal institutions under the names of Dr. Camp, Dr Eggelston and Dr. Lewis, in Baltimore, Philadelphia and New York.

Electric wiring that is carried through holes or otherwise exposed to chafing can be protected by short lengths of rubber tubing held in place with rubber cement

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HEEL DISHING DISCUSSED IN SALESMAN'S LANGUAGE

hy Wheels Are Made Dish Shaped and the Effect of the Construction in Increasing Strength—Axle Cambering Made Plain.

"If you stand at the front of the car," id the salesman, as he led the prospect ound from an inspection of the motor and aced him facing the radiator, "you will otice that the wheels are dished. That's —"

"What do you mean by that?" interrupted e prospect, as he fished in his waistcoat ocket for a cigar.

"Dished? Why, dish-shaped," elucidated e salesman, illustrating with a cupped and. "If you laid one of the wheels flat s edges would stick up, same as the edges f a dish."

"What's the idea," interrupted the pros-ect, "to give the car a classy appearance?"

"Not exactly," patiently explained the alesman, "though I've got to admit that t does make the car look a little better. No, hat's not why the wheels are dished. They re dish shaped because they are stronger hat way than they are when they are flat.

"When the wheels are made, the spokes re trimmed so that they are a little bit onger than they should be to have them lie lat when the felloe band is put on. The esult is that when the wheel is finished, the outer ends of the spokes project outwards from the hub, giving the wheel the shape of a dish—hence the term. The spokes are made that way so that they will stand a tremendous side thrust without buckling. Suppose you were driving along and your car skidded—bang!—up against a curb. See the point? The dished wheel is so formed that it resists just such shocks as those and therefore it minimizes breakage.

"The angle of the out-spreading spokes generally is balanced by cambering or slightly inclining the axle spindle from the vertical. This gives the lower spokes a very nearly vertical position in relation to the ground and, of course, it accentuates the dishing because it removes the tops of the wheels further from each other than they ordinarily would be removed. Incidentally, the cambered axle permits the wheels to resist side strains in an elastic manner while at the same time it places the weight of the car directly on the ends of the spokes."

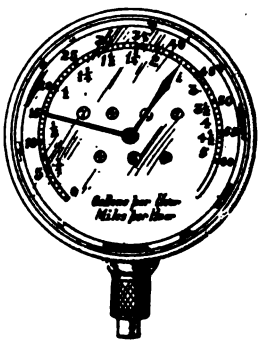
"But whether the wheels are dished or not," continued the salesman, getting warmed up to his work, "it is advisable, and I believe it is generally conceded to be good practice, for the front axle to be slightly cambered for the turning point of the tire on the road then is placed directly in line with the steering pivot and the result is that the car steers easily."

"Thanks," replied the prospect. "You're the first man I ever saw who could explain that little thing to me. There's something else that has been bothering me and——"

But the had moved out of eavesdropping range.

Develops Engine Efficiency Indicator.

By way of affording the driver of a car a definite means of ascertaining at all times the efficiency of his engine, a British engineer has perfected a device that is no less ingenious than it should prove useful to anyone who would reduce fuel consumption figures to the minimum. The device, which is virtually an efficiency meter, is shown by the accompanying illustration which makes plain its external appearance; just how the indicator operates has not been divulged



FUEL CONSUMPTION METER

by the inventor, though a record of what the instrument does is none the less interesting.

The efficiency indicator, as it is styled, is combined with an ordinary speedometer, as is shown by the picture. The dial, in addition to carrying the speed per miles calibration, carries figures which indicate the number of gallons of fuel used per hour. In the illustration, for instance, a speed of 15 miles an hour is indicated and the other hand shows that the engine is using fuel at the rate of 2½ gallons per hour, the two indications being taken while a car was driven up a steep hill. Obviously on level road, with the throttle open only a narrow slit, the consumption must drop, and once the normal consumption for various speeds and grades has been ascertained by the driver a glance at the indicator will suffice to make plain whether or not the engine is operating at its proper efficiency. Needless to add, each instrument must be calibrated for the engine in the car to which it is fitted, though once the adjustment is made the setting will not require to be changed for an indefinite period.

DANGER SIGNAL THAT HOLDS UP TRAIN OF "CUSS WORDS"

Miniature Railroad Semaphore in Stockroom Tells Male Employes Women Are Present—Can't Swear Until They Leave.

"Stop cussin', the block's agin yuh!"

"Whaddye mean, the block's agin me?" demanded the new employe in the stockroom of the Louis Geyler Co., at 2519 Michigan avenue, Chicago.

"The block! Yuh boob! Can't yuh see it?" demanded the older employe as he pointed to a little red lamp on the wall, which also disclosed a "danger" sign.

"What the —— is that thing?"

"Sh-h-h-h!" cautioned the older employe, who proceeded to explain.

The whole scheme is but another indication of the progress which is being made by women's rights, and whereas it has been commonly supposed that when she got her rights she would have to mix with men, as men are the scheme, proves to the contrary. For when a woman goes among the Geyler company's men in that room where Hudson parts are stocked, the men have to quit "cussin'" until she has gone. When they get the "clear" sign they can "cut loose" again.

"Time and again calls come from the stockroom for a stenographer," said Geyler. "Gliding into the 'department behind the bars,' the young lady would prepare to make a typewritten copy of the work assigned to her only to be interrupted by repairmen, chauffeurs and testers, who with careless masculine talk often caused the young lady considerable embarrassment.

"'What shall we do to be saved from our own embarrassment?' asked one of the drivers. 'Woman has rights that even rough-speaking men much observe.'

"The mechanical superintendent thought over the situation and the red-light semaphore is the result. The moment a woman enters the stock department the semaphore is displayed. When she leaves the arm falls back to 'clear.'

"'We have a large force of employes,' remarked one of the stenographers, 'and they are just as good fellows as one will meet in any automobile concern. But sometimes the shopmen forget women are around. The semaphore is all right.'"

Stove Polish for Hot Exhaust Pipes.

The old-fashioned home variety of stove polish is excellent for finishing exhaust pipes from which ordinary paint soon is burned and which always present a more or less unsightly appearance.

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1,063,538. Internal-Combustion Engine. William Harper, Jr., New Bloomfield, Pa., assignor, by mesne assignments, of three-tenths to Harper Engineering Co., a corporation of New York, and seven-tenths to Thomas A. Nevins, East Orange, N. J. Original application filed June 10, 1907, Serial No. 378,147. Divided and this application filed Dec. 6, 1907, Serial No. 405,301. Renewed Oct. 30, 1912. Serial No. 728,725. (Means for generating steam to mix with gas fuel.) 2 claims.

1,063,594. Resilient Vehicle-Wheel. William M. Reese, Los Angeles, Cal. Filed Nov. 13, 1911. Serial No. 660,157. (Wheel with pneumatic cushions between inner and outer rims.) 4 claims.

1,063,15. Piston-Cooling Device for Internal-Combustion Engines. Karl Steinbecker, Charlottenburg, Germany, assignor to General Electric Co., a corporation of New York. Filed Sept. 7, 1911. Serial No. 648,012. (Piston cooling system with telescopic water pipe joints.) 6 claims.

1,063,638. Internal-Combustion Engine. Asa F. Batchelder, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Filed Sept. 28, 1910. Serial No. 584,176. (Two-cycle motor with two-diameter piston and cylinder.) 7 claims.

1,063,641. Shock-Absorber. Karl V. Bennis, Los Alamitos, Cal. Filed July 8, 1912. Serial No. 708,381. (Auxiliary spring shock absorber.) 7 claims.

1,063,647. Automobile Heating Apparatus. Leo A. Brigel, Cheviot, Ohio. Filed Oct. 2, 1909. Serial No. 520,660. (Means for heating a circulating liquid by exhaust gases.) 4 claims.

1,063,648. Demountable Rim for Vehicle Wheels. John W. Broderick, Newark, N. J. Filed Jan. 12, 1910. Serial No. 537,617. (Rim bolted to felloe through lugs.) 3 claims.

1,063,705. Sheet-Metal Cage for Roller-Bearings. Charles S. Lockwood, Newark, N. J., assignor to Hyatt Roller Bearing Co., Harrison, N. J., a corporation of New Jersey. Filed Jan. 2, 1912. Serial No. 668,833. (Hyatt Roller bearing cage.) 1 claim.

1,063,709. Vase for Vehicles. John E. Marsden, Philadelphia, Pa. Filed Aug. 14, 1912. Serial No. 714,964. (Flower vase and bracket.) 8 claims.

1,063,721. Tightener. Charles B. Nelson, Lindsborg, Kan. Filed March 23, 1912. Serial No. 685,792. (Means for tightening anti-skid chains.) 1 claim.

1,063,771. Wheel. Summers Brown, London, England. Filed Jan. 12, 1912. Serial No. 670,781. (Wheel with telescoping spring-cushioned spokes.) 10 claims.

1,063,784. Spring Wheel. Sam R. Dwiggins and Lawrence E. Kelley, Leonard, Tex. Filed June 15, 1912. Serial No. 703,968. (Wheel with springs between tire and rim.) 3 claims.

1,063,798. Motor Plow. Fred B. Houdek, Cuba, Kan. Filed May 4, 1912. Serial No. 695,181. (Frame for motor plow.) 1 claim.

1,063,820. Distributer for Internal-Combustion Engines. Eugene Louis Leon Menage, Paris, France. Filed June 13, 1912. Serial No. 703,445. (Rotary disk valve in cylinder head.) 4 claims.

1,063,881. Vehicle Wheel. Frank Holdman, St. Johns, Ore. Filed April 22, 1911. Serial No. 622,840. (Wheel with spring cushioned hub.) 1 claim.

1,063,888. Tire. Victor Lindholm, Hoquiam, Wash. Filed March 30, 1912. Serial No. 687,488. (Tire of disks of resilient material.) 2 claims.

1,063,892. Vehicle Wheel. Tony Poss, Aurora, Ill. Filed April 8, 1912. Serial No. 689,295. (Wood wheel construction.) 6 claims.

1,063,901. Gas-Engine Starter. Elwood C. Allison, Brooklyn, N. Y. Filed Aug. 2, 1912. Serial No. 712,957. (Ignition starter with compressed air reservoir.) 2 claims.

1,063,943. Spring Suspension. John Henry Ptacek-Bird, Chicago, Ill. Filed Nov. 16, 1911. Serial No. 660,661. (Suring-and-lever suspension system.) 3 claims.

1,063,952. Headlight. Charles C. Bruff, Coalport, England. Filed Sept. 20, 1912. Serial No. 721,365. (Headlights moving with steering gear.) 3 claims.

1,063,963. Indicator. Thomas George Fortune and William Lotridge, New York, N. Y. Filed Jan. 12, 1911. Serial No. 602,147. (Rear signal to indicate intended direction of car.) 3 claims.

1,063,967. Harvester. John E. Gilson, Port Washington, Wis., assignor to Gilson Mfg. Co., Port Washington, Wis. Filed Sept. 24, 1909. Serial No. 519,337. (Agricultural tractor.) 6 claims.

1,063,972. Vehicle-Tire. John C. Hollings, Boston, Mass., assignor to Flora S. Alden, Boston, Mass. Filed May 8, 1912. Serial No. 695,873. (Tire of woven wire fabric.) 4 claims.

1,063,998. Clutch. Alfred B. Morse, South Easton, Mass. Filed Feb. 21, 1912. Serial No. 679,150. (Multiple disk clutch.) 2 claims.

1,064,012. Change-Speed Gearing. Henry A. Ryther, Montague, Mass., assignor to Millers Falls Company, Millers Falls, Mass., a corporation of Massachusetts. Filed July 1, 1912. Serial No. 706,863. (Individual clutch bevel gear transmission.) 6 claims.

1,064,019. Shock-Absorber. George E. Shippey, Pittsfield, Mass. Filed May 13, 1912. Serial No. 697,034. (Double-arm friction shock absorber.) 7 claims.

1,064,035. Tire-Making Machine. Thomas J. Whalen, New Brunswick, N. J., assignor, by mesne assignments, to Harry M. Marble, Newark, N. J. Filed Oct. 6, 1910, Serial No. 585,623. Renewed Oct. 26, 1912. Serial No. 727,968. (Construction of tire-forming machine.) 2 claims.

1,064,043. Wind-Shield. Edward J. Beseman, Los Angeles, Cal. Filed April 25, 1912. Serial No. 693,216. (Windshield with dust deflector.) 4 claims.

1,064,045. Agricultural Implement. Henry H. Boenker, St. Charles, Mo. Original application filed Dec. 8, 1910, Serial No. 596,303. Divided and this application filed March 7, 1911. Serial No. 612,847. (Motor agricultural implement.) 11 claims.

1,064,047. Clutch-Drive for Motor-Wheels. Lewis Brandenburg, Portland, Ind. Filed Sept. 5, 1911. Serial No. 647,607. (Sprockets on statitonary axle driving wheels through dog clutches.) 2 claims.

1,064,055. Gas-Engine Starter. Charles H. Cuno, Meriden, Conn. Filed April 5, 1912. Serial No. 688,586. (Distributer for ignition starter.) 9 claims.

1,064,086. Method of Producing a Fuel Vapor. Alexander T. Porter and Herbert E. Rider, New York, N. Y., assignors to Oil Utilities Co., a corporation of New York. Filed April 17, 1912. Serial No. 691,269. (Carburetter in which fuel is vaporized by partial combustion.) 9 claims.

1,064,089. Motor-Vehicle. William Pearce Rayner, Philadelphia, Pa. Filed June 23, 1910. Serial No. 568,540. (Gasolene-electric driving system.) 9 claims.

1,064,095. Engine. Louis Schwitzer, Indianapolis, Ind., assignor, by mesne assignments, to Lyons Atlas Co., Indianapolis, Ind., a corporation of Indiana. Filed April 17, 1911. Serial No. 621,652. (Lubrication system.) 17 claims.

1,064,097. Cushion Tire. Michel J. Selzer, Akron, Ohio. Filed June 10, 1912. Serial No. 702,789. (Solid rubber tire with ventilating openings.) 1 claim.

1,064,100. Tire Protector. Clifton A. Smith, New Orleans, La. Filed Jan. 15, 1912. Serial No. 671,184. (Longitudinal and transverse strips interwoven to form a tread.) 1 claim.

1,064,119. Vehicle Tire. William E. Anderson, St. Louis, Mo. iFled Oct. 14, 1911. Serial No. 654,650. (Armored tread pneumatic tire of square cross-section.) 4 claims.

1,064,129. Resilient Wheel. William L. Chrysler, Eugene, Ore., assignor, by direct and mesne assignments, to Portland Automobile Wheel Co., Portland, Ore., a corporation of Oregon. Filed June 8, 1911. Serial No. 632,034. (Wheel with ... cushion around hub.) 4 claims.

1,064,132. Starting Mechanism for Internal-Combustion Engines. Arthur R. Curtis, Denver, ... Filed Oct. 12, 1908. Serial No. 457,236. (... starter.) 4 claims.

1,064,150. Priming Device for Explosive Engines. Peter McDaniel and William F. Kernolle, Frankfort, Ind.; said McDaniel assignor to Benjamin F. ... Frontfort, Ind. Filed Apr. 24, 1912. Serial No. ... 958. (Dashboard priming tank and valve.) 1 claim.

1,064,156. Wheel. John Erhardt Muhlfeld, Baltimore, Md. Filed Sept. 23, 1910. Serial No. 583,... (Wheel with pneumatic cushion surrounding hub.) ... claims.

1,064,161. Spring. John J. Newkirk, Chihuahua, Mexico. Filed Jan. 14, 1911. Serial No. 602,... (Semi-elliptic spring with one end short and ... and the other long and flexible.) 1 claim.

1,064,189. Vehicle Wheel. Michele Berardi, Philadelphia, Pa., and Michele Guglielmo de Simone, New York N. Y.; said de Simone assignor of ... third of his interest to said Bernardini. Filed Jan. 17, 1912. Serial No. 704,193. (Wheel with pneumatic tire around hub.) 3 claims.

1,064,190. Electric Air-Heater. Lester A. ... Cambridge, Mass., assignor to Joseph C. Kent, ... tee, Cambridge, Mass. Filed Dec. 14, 1912. Serial No. 736,662. (Electric heater for fuel pipe ... carburetter.) 1 claim.

1,064,199. Speed-Changing Device. James W. ... gar, McLaughlin, S. D. Filed March 9, 1912. Serial No. 682,637. (Drive through spur and bevel ... and dog clutches.) 5 claims.

1,064,213. Supporting Means for Transmission Mechanism. Reinhoid Herman, Crafton, Pa. Filed Jan. 9, 1911. Serial No. 601,754. (Suspension ... motor and transmission system.) 23 claims.

1,064,214. Shock Absorbing Device. Reinhold Herman, Crafton, Pa. Filed April 25, 1911. Serial No. 623,287. (Pneumatic shock absorber.) 2 claims.

1,064,215. Cushioning Apparatus for Vehicle Frames. Reinhold Herman, Crafton, Pa. Filed June 21, 1908, Serial No. 411,880. Renewed Dec. 10, 1911. Serial No. 736,045. (Spring suspension system.) ... claims.

1,064,257. Resilient Wheel. Adolph Rosenthal, Alexandria, La., assignor of 25-100ths to John N. ... Cramer, Harrington township, Bergen county, N. J., and one-half to Joseph M. Goldberg, Alexandria, La. Filed July 31, 1912. Serial No. 712,381. (Spring-cushioned hub.) 1 claim.

1,064,259. Motor Vehicle. Paul Synnestvedt, Pittsburgh, Pa. Filed March 12, 1907. Serial No. 361,938. Renewed Oct. 24, 1912. Serial No. 727,... (Single-motor electric vehicle drive.) 24 claims.

1,064,300. Piston Packing-Ring. Willis G. Dodd, San Francisco, Cal. Filed Sept. 3, 1912. Serial No. 718,339. (Piston ring with stepped joint.) 3 claims.

1,064,259. Demountable Rim. John D. Kennedy, New Kensington, Pa. Filed Feb. 3, 1912. Serial No. 675,308. (Demountable rim for solid tires.) ... claim.

1,064,353. Resilient Wheel. William Lupton, Los ... Cal. Filed Nov. 14, 1911. Serial No. 660,... (Wheel with curved spring spokes.) 1 claim.

1,064,365. Speed-Changing Mechanism. George D. ... Munsing, New York, N. Y. Original application ... filed May 17, 1911, Serial No. 627,864. Divided and ... this application filed July 27, 1912. Serial No. 7... 898. (Sliding gear system with three shafts.) ... claims.

1,064,368. Means for Charging the Cylinders of an Internal-Combustion Engine with Explosive Gas. Owen W. Nacker, Flint, Mich., assignor of one-half to Alanson P. Brush, Detroit, Mich. Filed June 19, 1912. Serial No. 704,474. (Priming device.) 4 claims.

1,064,562. Fluid Power-Transmission Apparatus. Frank H. Summeril, Denver, Colo., assignor of one-half to Horatio N. Norton, Mount Vernon, N. Y. Filed May 21, 1910. Serial No. 562,790. (Hydraulic transmission system.) 24 claims.

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Service

Now go on and smile—with some it may be a sad smile. All because this word service is the most universally used and abused word in automobile selling. Our ambition is not merely the sale of a National but the pride in keeping it sold to a satisfied customer.

THERE is no generally accepted standard by which you can judge service. Experience is the only way to find out, and sometimes this is too unfortunate and too costly. Everybody promises service; every dealer offers service as an inducement; every manufacturer boasts of his service. This word is becoming a joke—and a disastrous joke.

AS a matter of fact, every dealer and every manufacturer can not give the same degree of good service. Yet, when a man looks along auto row for a car, he gets equal promises of service from every dealer. Even if the dealer means well, he won't give good service to his customer if the factory the dealer represents does not give him good service. As a result the public has grown skeptical—and it is the manufacturer's own fault. Service-promises mean much or nothing, depending upon who makes the promise.

Stock Champion. Fastest Stock Car Mile.

National

International 500-Mile Record Holder

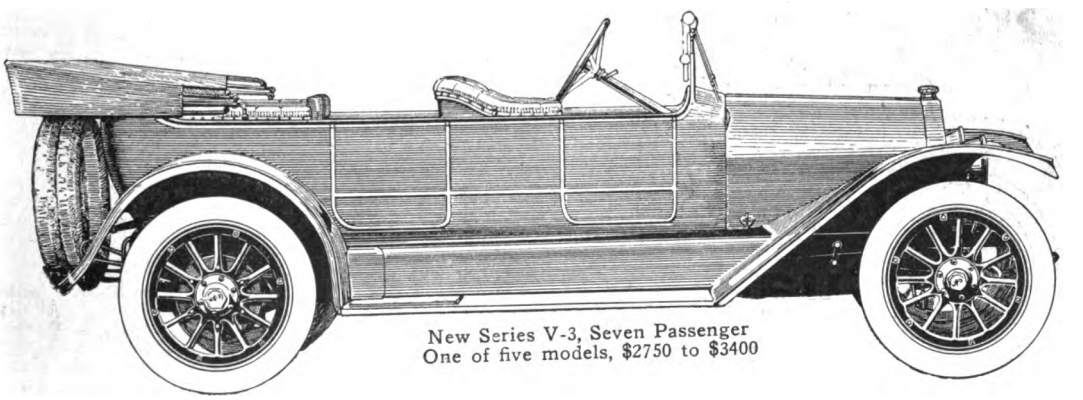
The National Motor Vehicle Co., Indianapolis, Indiana, offers you the following service guarantee. We believe no other company can give you better, and we know we can give you all we promise. Ours is a prosperous concern, and therefore in a better position to be liberal.

1. Service starts with the National car and is not a mere after-apology. We put service into your car when it is built so that it requires a minimum attention in your hands.

2. A company of 14 years' success, of enviable reputation and stability as well as ability is your guarantee that our promises will be fulfilled.

3. Liberal attitude toward dealers in supplying parts with dispatch and cheerfulness and in guaranteeing to private owners that every National dealer's service will be satisfactory.

4. Our policy is to keep our good name and our cars' good reputation above reproach. Satisfied and service-fied customers is our successful ambition.



New Series V-3, Seven Passenger
One of five models, $2750 to $3400

Let us tell you the story of our National Cars.
Own a National and avoid motor worries. Write us.

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A. R. MOSLER & CO.

P.O. Box "M," MT. VERNON, N. Y.

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Manufacturers of Electric Lighting and Starting Equipment Who Use and Recommend



Storage Batteries

Adams-Bagnail Electric Co.	Cleveland, O.
Adams & Westlake Co.	Chicago, Ill.
Bailey Electric Co.	Grand Rapids, Mich.
Bijur Motor Lighting Co.	Hoboken, N. J.
Briggs Magneto Co.	Elkhart, Ind
Dayton-Dick Co.	Quincy, Ill.
Dean Electric Co.	Elyria, O.
Detroit Electric Appliance Co.	Detroit, Mich.
Diehl Mfg. Co.	Elizabethtown, N. J.
Dyneto Electric Co.	Syracuse, N. Y.
Economy Mfg. Co.	York, Pa.
Electric Auto-Lite Co.	Toledo, O.
Electro Light & Starter Co.	Indianapolis, Ind.
Emerson Electric Co.	St. Louis, Mo.
Esterline Co.	Indianapolis, Ind.
Fisher Electrical Works	Detroit, Mich.
Gray & Davis	Boston, Mass.
Hartford Suspension Co.	Jersey City, N. J.
Holtzer-Cabot Electric Co.	Brookline, Mass.
Ide Engine Co.	Springfield, Ill.
Ignition Starter Co.	Detroit, Mich.
Jones Electric Starter Co.	Chicago, Ill.
Kemco Elec. Mfg. Co.	Cleveland, O.
Leece-Neville Co.	Cleveland, O.
National Coil Co.	Lansing, Mich.
North-East Electric Co.	Rochester, N. Y.
Northwestern Mfg. Co.	Milwaukee, Wis.
Remy Electric Co.	Anderson, Ind.
Rushmore Dynamo Works	Plainfield, N. J.
Splitdorf Electric Co.	Newark, N. J.
Wagner Electric Mfg. Co.	St. Louis, Mo.
Ward Leonard Electric Co.	Bronxville, N. Y.
R. C. Wells Mfg. Co.	Fond du Lac, Wis.
Westinghouse Elec. & Mfg. Co.	East Pittsburgh, Pa.

Count Them

and if you are at all familiar with the various Electric Lighting and Starting Systems you will readily note that there are but THREE MANUFACTURERS whose names do not appear in this list.

A Total of 37 Manufacturers of Whom 34 Recommend the Use of GLBA Batteries or 91.9%

and Agents for cars not equipped with GLBA Batteries are INSISTING that their manufacturers SHALL ADOPT them instead of those which are IMITATIONS of the GLBA.

This overwhelming preference for GLBA Storage Batteries is not due to price consideration, as THEY ARE NOT SOLD ON PRICE.

The actual performance, superior quality, long life, enormous manufacturing facilities, and our unequalled service organization are the features that prompt the FAR-SEEING MANUFACTURERS to pin their faith to the GLBA.

When you buy a car, remember that the starting and lighting system is a vital part of the car equipment.

YOU WANT THE BEST. If you insist on a system made by any firm in the above list, you get an Battery with it—if you ACCEPT one of the other 3, remember that you ARE NOT getting a system whose elements are of the best—and ONLY from a combination of the best can be secured that perfect, harmonious operation which insures the utmost efficiency and satisfaction.

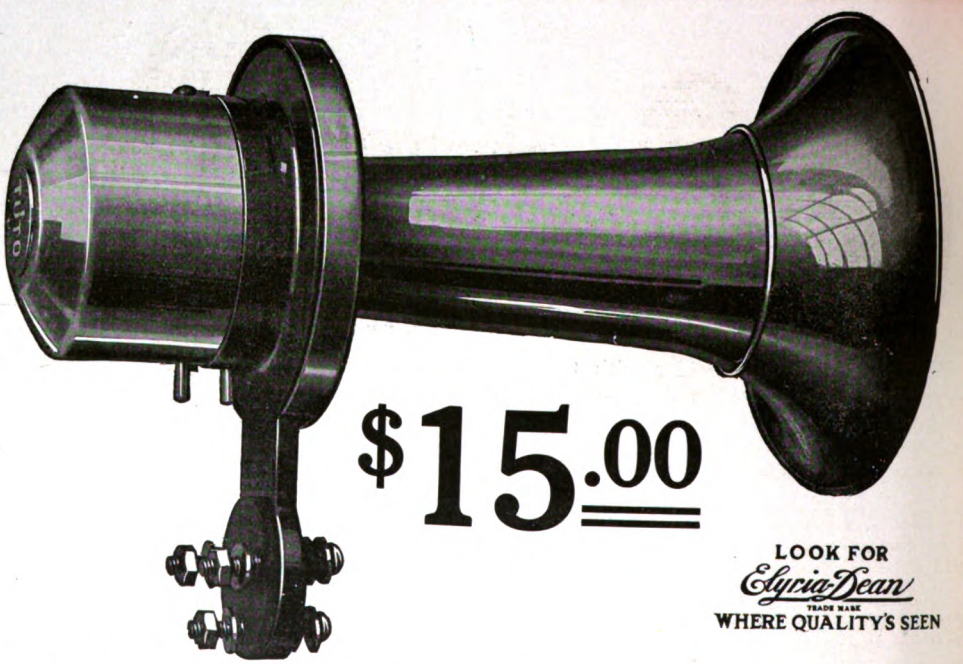
Write us for full information

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 136 W. 52nd Street.
Detroit Branch: 1191 Woodward Avenue.
Chicago Branch: 2241 Michigan Avenue.
San Francisco Branch: 243 Monadnock Building.
Indianapolis Branch: 438 and 439 Indiana Pythian Building.

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TUTO HORN



$15.00

LOOK FOR
Elyria-Dean
TRADE MARK
WHERE QUALITY'S SEEN

Elyria-Dean Warning Signals, Best From Your Own Standpoint

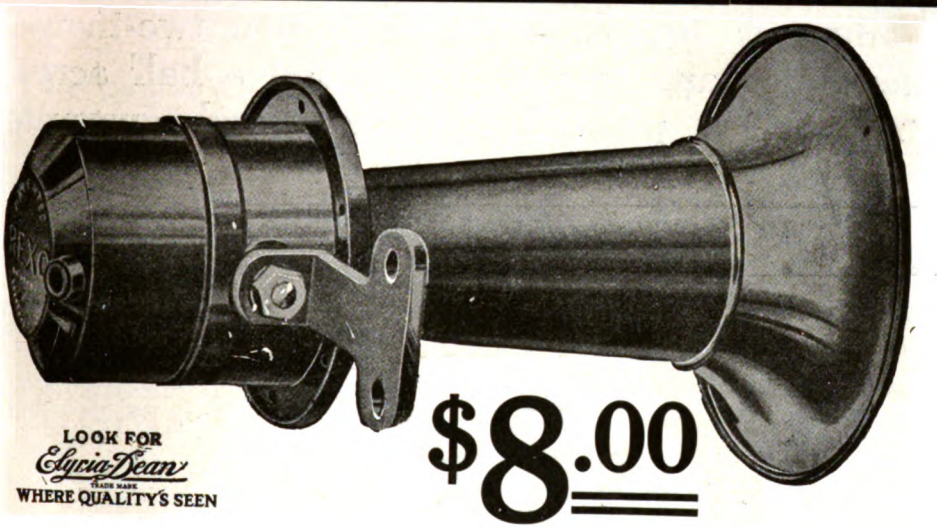
Goods which have quality and which are priced right possess two of the greatest selling advantages in any retail selling field

Here are the things that insure the quality of Rexo and Tuto Signals:

The correctness of the Elyria-Dean principle is beyond controversy. Your customers never argue about mechanics of a horn, and even if they did, Elyria-Dean Signals have more points in their favor than any other; you have the word of an old established and responsible concern, a concern whose electrical products are known the world over for their lasting qualities.

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REXO HORN



In workmanship and material Elyria-Dean Warning Signals are equal to the highest priced and their finish as good as can be made.

The Elyria-Dean Line of Automobile Warning Signals consists of the Tuto, a two tone signal for large cars, whose bulk and speed make necessary, upon occasion, a warning device which will at once roar out a penetrating and positive demand for the right of way, while upon the majority of occasions its lower, coaxing signal is amply adequate. The sounds are governed by a light or a hard push upon the control button.

And the Rexo, which has a sound almost as loud and equally as penetrating as the Tuto, although the Rexo is smaller and corresponds with the size of a smaller car.

With either the Tuto or the Rexo the warning sound jumps to its maximum volume immediately, no waiting until the mechanism has speeded up.

Price of the Tuto is $15.00, of the Rexo $8.00. Search the open market over and you will not find the same quality and price on two horns so well adapted to motoring needs in size and sound.

The Elyria-Dean proposition to Dealers is liberal, in fact it will make equally as strong an appeal to you as do Elyria-Dean Signals at their prices to your customers. Write us.

Dean Electric Company, 2501 Olive St., Elyria, Ohio

Kansas City, Mo. San Francisco, Cal.

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American made for American trade

New Departure Ball Bearings

THE complete success of New Departure ball bearings in meeting the demands of the American car manufacturer for a bearing of quality, capacity, efficiency and durability, is attested by the fact that **two-thousand skilled mechanics are operating ten and a half acres of modern machinery, producing ten-thousand guaranteed bearings per day.**

Can we send you Catalog?



The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit

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MESHES ITSELF
UNMESHES ITSELF



Rushmore Starter out of action

The SNAPPY Start is the EASY Start

JUST PRESS A BUTTON

If air didn't get hot when quickly compressed, all the electric starters on earth couldn't make an ice-cold engine pick up its cycle.

The gasoline of today doesn't evaporate fast enough to mention at 30 degrees F. and below. You could run ice-cold liquid gasoline through an engine all day without getting a single "kick," if the air stayed cold.

It's the heat of compression—nothing else—that warms up a cold engine in winter so that the raw gasoline reaching the cylinders evaporates and ignites. The quicker the spin, the less heat escapes to the cylinder walls and the more heat is available to evaporate the gasoline.

With 85 lbs. compression the rise in temperature, with no loss to the cylinder walls, would be nearly 400 degrees.

That is the main reason why an electric starter, to be satisfactory in cold weather, ***must start the engine with a rush*** A sluggish start permits leakage and loss of heat, and compels a slow process of "warming up" in place of the almost instantaneous start possible with quick compression.

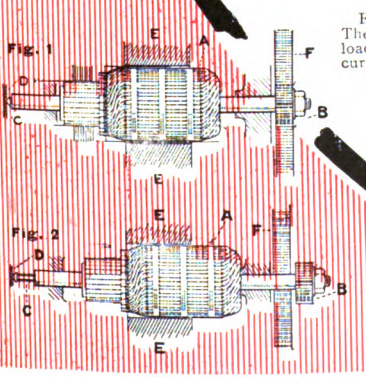
The RUSHMORE STARTER

has an efficiency ratio ***from battery to flywheel*** of 72 to 75%. This is about 50% higher than the efficiency usually obtained, counting the loss in intermediate gears with other starters.

The higher efficiency of the Rushmore is a true measure of the higher speed at which it spins the engine for equal current used.

Fig. 1. The Starter in action. Pressing the switch button causes the poles E E to attract the armature A to the left, thus engaging the pinion with the flywheel gear.

Fig. 2. After the engine starts. The increase in speed, when the load is removed, kills the battery current for an instant, allowing the spring C to slip the pinion B out of mesh.



The Rushmore Starter is of slow speed design and runs normally at 1000 to 1200 r.p.m. It is electrically much more efficient than a high speed starter would be, and there is no loss in intermediate gears; hence a very small motor develops ample power. By an ingeniously simple use of armature end play a pinion keyed fast on the armature shaft is made to mesh and unmesh automatically with the flywheel gear at the right instants. The operator simply presses a button; the Starter does all the rest.

Used on: { **SIMPLEX** **LANCIA** **KNOX** **MERCER** **REGAL** **KLINE**

Rushmore Dynamo Works,
Plainfield, N. J.

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THE Detroit ELECTRIC

Why the Electric, and Why the Detroit?

It is an axiom in the motor car business that a dealer is often known by the car he handles.

In this advanced stage of the motor car business, it is further recognized that a live dealer cannot afford to overlook the electric.

So, not only does a dealer need to handle an electric.

He must handle a leader among electrics.

The Detroit Electric is just such a leader. It is being built and sold in greater numbers than any other. It is produced by the largest concern building electrics. AND NOT ONLY THE LARGEST BUT THE STRONGEST FINANCIALLY.

Consider for a moment the significance of such factors as these:

80 per cent. of the Detroit Electrics in service are owned by those who drive no other cars.

In Kansas City, Seattle and other cities noted for their hills, the Detroit Electric dominates its field.

The Detroit Electric leads in Chicago, the world's greatest market for electrics.

More advanced features are found in the Detroit Electric than in any other.

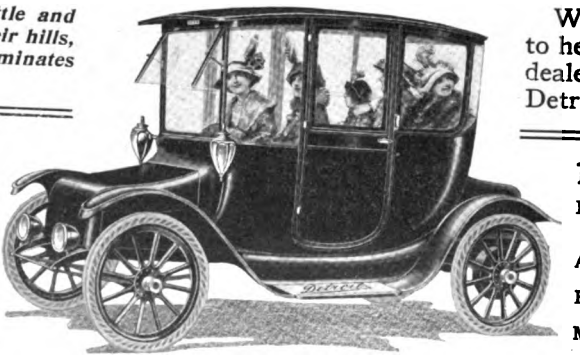
Sales of the Detroit Electric are approximately 100 per cent. greater than for any other electric.

Simplicity of mechanism and economy in operation are developed to the greatest possible degree in the Detroit Electric. It possesses beauty in finish and luxury in appointments that mark the highest expression in body building. Its reliability and sturdiness is every day being demonstrated.

At this time there is a limited amount of open territory which we will allot to live, responsible dealers—men who appreciate the future before the electric.

It means a lot to a dealer to make a connection with such a concern as the builders of the Detroit Electric. It means a lot to a dealer to handle the leader among electrics.

We are always glad to hear from automobile dealers interested in the Detroit Electric.



1914 Features:

Choice of worm or bevel gear
Detroit Duplex Drive
Electric Hand Brake
Longer wheel base
12 ft. shorter turning radius
Larger Tires
Larger Brakes

1914 Features:

Increased Battery Capacity (washing unnecessary)
All battery cells accessible by raising hoods
Hanlon Patented Rain Vision Wind Shield
More exclusive appointments
Deep Turkish Cushions

ANDERSON ELECTRIC CAR COMPANY, Detroit, U. S. A.

Builders of "The Detroit Electric"

Largest Manufacturers of Electric Pleasure Vehicles in the World

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60,000 *Indians* for 1914
—*Big Red Ones*

The *Indian* Equipment

CORBIN-BROWN SPEEDOMETER
"The Speedometer of Absolute Accuracy"

In competition with practically all other makes and at a higher price, the Corbin-Brown Speedometer has been selected by the Hendee Manufacturing Co., of Springfield, Mass., manufacturers of the Indian Motocycle, as part of their 1914 equipment.

This unprecedented order is all the more significant because of the generally appreciated high manufacturing standard maintained by the Hendee Manufacturing Co.

The Corbin-Brown Speedometer was selected only after the most exhaustive tests for accuracy and dependability.



Contributing factors were the reputation of the manufacturers and the fair guarantee given with every Corbin-Brown—a guarantee not based on mileage but on a full year's service.

Investigate the Corbin-Brown

Write today for Catalog

THE CORBIN SCREW CORPORATION
THE AMERICAN HARDWARE CORPORATION, Successors
NEW BRITAIN, CONN.

BRANCHES: New York Chicago Philadelphia

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You cannot possibly realize the amount of severe shock and strain that is concentrated on the bearings of your car and transmitted through the bearings to all the operating parts. This occurs even when you are traveling over city pavements.
Hyatt Roller Bearings cushion and, in a great measure, absorb these shocks, hence relieve the gears and shafts of this strain.
This is due to the Flexible Roller, an exclusive Hyatt feature.

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request

"Hyatt Quiet Bearings"

HY·FLEX·ROL

HYATT ROLLER BEARING CO.
DETROIT CHICAGO
NEWARK, N.J.

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Oldsmobile 1914

Established 1880 Incorporated 1899

THE dealer who sells the Oldsmobile is dealing in known values, and enjoys the prestige of leadership, together with the liberal profits that are always accorded a leader.

There is no question of Oldsmobile superiority. Everywhere it is recognized, and the dealer who sells it need never argue the point.

Wherever automobile men meet, the new Oldsmobile Model 54 commands their admiring comment, and it is frequently noted as remarkable that such a perfect car can be built and sold for such a price.

Combination Four or Five-Passenger Phaeton, Touring Body Type, $2975

Seven-Passenger Touring Body, $175 Extra

Limousine $4300

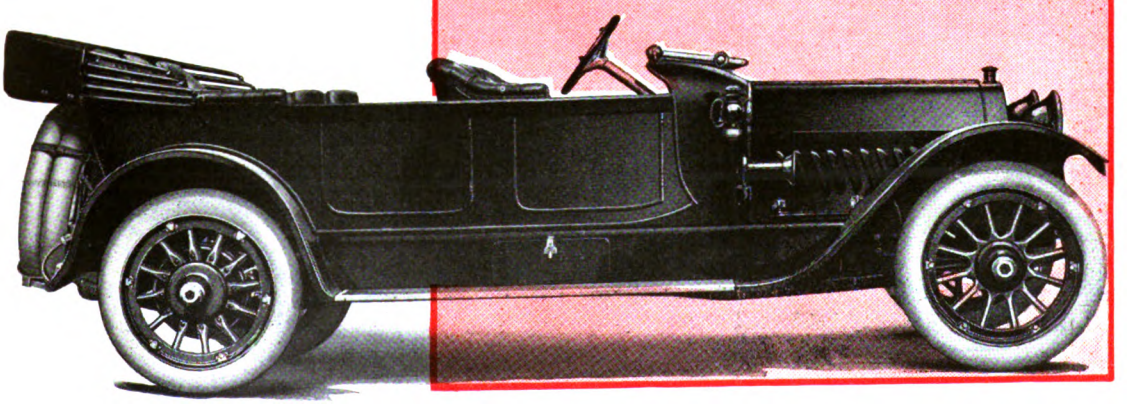
Our increased production for the season of 1914 permits us to allot territory to a few extra dealers.

Never in the history of this company have we been so well equipped to meet the demands of our dealers by prompt shipment of cars as ordered. We urge you to write us at once, if you are prepared to sell in your territory a car of the high standards of quality, material and design found in the Oldsmobile.

OLDS MOTOR WORKS, Lansing, Mich.

Equipment 1914 Oldsmobile Model 54

Combination electric and oil side and tail lamps, special Oldsmobile design. Special design Oldsmobile electric head lamps. Special design three-way adjustable ventilating windshield. Top, boot, and patent adjustable side curtains. 60 miles speedometer. Adjustable stem setting and winding Waltham clock. Rear tire irons, capacity for two tires. Demountable rims, one extra. Imported horse-hair tonneau mat. Motor-driven air pump. Famous Delco starting, lighting and ignition system. Electric light in tonneau. Extension electric trouble lamp. Tools, jack. Patented bow separating top holders. Adjustable auxiliary seats in seven-passenger. (Extra, at additional cost, wire wheels; special Oldsmobile touring trunks.) Motor, 50 horsepower, six cylinders, unit power plant, three-point suspension. Bore 4¼, stroke 5¼. Extreme length of four and five-passenger models, 16 feet. Extreme length of seven-passenger, 17 feet. Spring, front, semi-elliptic. Spring, rear, ¾-elliptic, underslung. Tires, 36 x 5, both front and rear. Gabriel snubbers. Klaxon horn.



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How Often Do Passing Tourists Stop and Ask You the Way?

Every place of business should have handy a copy of the

Automobile Blue Book

Get people in the habit of coming to your store or garage for road information and they will follow the habit and buy things from you.

The greatest touring months are now coming and all the 1913 books are here in stock ready for immediate shipment.

Get Yours Today

Sent prepaid on receipt of $2.50 per volume

Vol. 1—New York State and Adjacent Ontario.
Vol. 2—New England and Coast Provinces.
Vol. 3—New Jersey, Pennsylvania and Southeast.
Vol. 4—The Middle Western States.
Vol. 5—From the Mississippi to Pacific Coast.

Motor World Publishing Company, **1600 BROADWAY NEW YORK**



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More Service

7 More Direct Factory Branches

50 More Service Stations

WE are now operating 8 direct factory branches in New York, Boston, Buffalo, Cleveland, Detroit, Indianapolis, Chicago and San Francisco.

In addition to this we are opening up 7 more direct factory branches in

Philadelphia Atlanta Los Angeles Minneapolis St. Louis
Pittsburgh Kansas City

This will make 15 direct factory branches.

We have in operation right now 53 service stations at the following points:

Albany, N. Y., 283 Central Ave.
Birmingham, Ala., 519-21 S. 20th St.
Bloomsbury, London, W. C.
Bridgeport, Conn., 433 Canon St.
Brooklyn, N. Y., 1186 Bedford Ave.
Christ Church, New Zealand
Dallas, Texas, 1922 Main St.
Davenport, Iowa, 217 Iowa St.
Dayton, Ohio, 102 N. Main St.
Denver, Colo., 1616 Broadway
Des Moines, Iowa
Edmonton, Alb., Can.
Erie, Pa., 1721 Sassafras St.
Fort Wayne, Ind., 115 Washington St.
Halifax, Nova Scotia, Can.
Hamburg, Germany
Hartford, Conn., 14-15 Wells St.
Houston, Texas, 1311 Main St.
Jacksonville, Fla., Laura and Church St.
Little Rock, Ark., 919 Main St.
Louisville, Ky., 928 Motor Row
Memphis, Tenn., 276 Monroe Ave.
Milwaukee, Wis., 126 Grand Ave.
Montreal, Que., Can., 97 Belury St.
Newark, N. J., 237 Halsey St.
New Orleans, La., 613 Baronne St.
Norfolk, Va., 2005 Brambleton Ave.
Omaha, Neb., 2119 Farnum Ave.
Oshawa, Ont., Canada
Paris, France, 107 Avenue Parmentier
Portland, Me., Free St.
Providence, R. I., 12 Fountain St.
Puteaux, Seine, France
Regina, Sask., Can.
Richmond, Va., 106 N. 8th St.
Rochester, N. Y., 205 State St.
San Antonio, Texas
Salt Lake City, Utah, 36 W. 2d, South
San Diego, Cal., 1125 Date St.
San Francisco, Cal., 1447 Van Ness Ave.
Sydney, N. S. W., Australia, 284 Pitt St.
Spokane, Wash.
Springfield, Mass., 317 Dwight St.
Syracuse, N. Y., 217 Grave St.
Transvaal, Africa, 96 Marshall St.
Trenton, N. J., 315 S. Broad St.
Toledo, Ohio, 2235 Madison Ave.
Toronto, Ont., Can., 469 Yonge St.
Washington, D. C., 1328-1330 New York Ave., N. W.
Worcester, Mass., 16 Mechanics St.

In addition to this we are opening up 50 ***more*** service stations so that there will be a Stewart-Warner branch or service station in practically every important city of America.

We give more speedometer service than all the other speedometer manufacturers of the world put together.

All Warner Auto-Meters are backed with a one year guarantee, liberally interpreted.

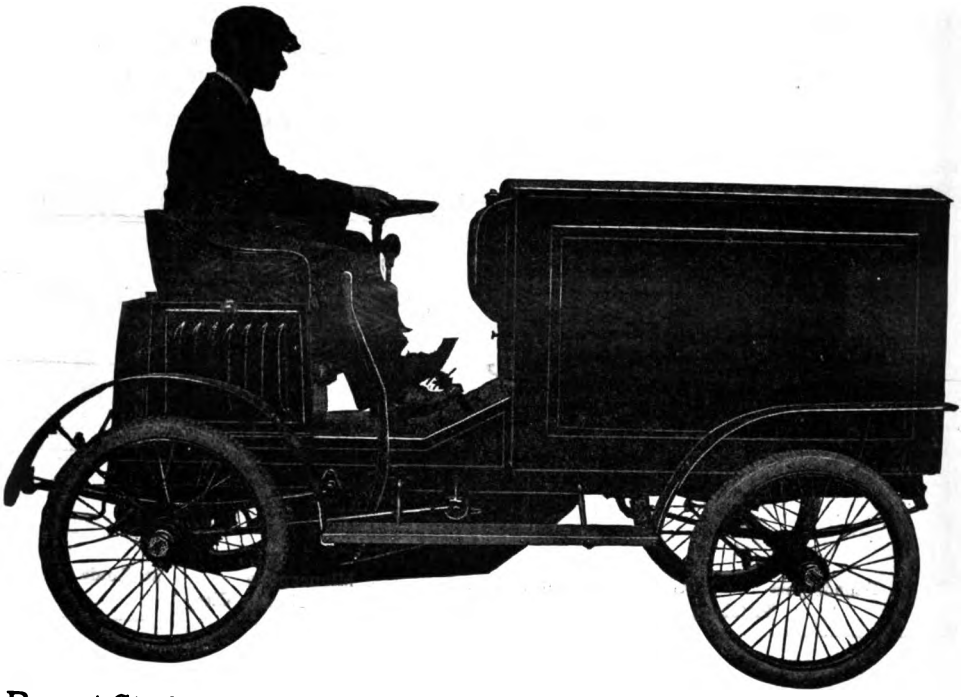
Stewart-Warner Speedometer Corporation

1949 Diversey Boulevard, Chicago, U. S. A.

WARNER AUTO-METER

Stewart Speedometer

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Recent Statistics gathered by a recognized authority upon retailing shows that there are over

800,000 STORES

in the United States who should logically use:

THE MOTOKART

for their delivery service. This list includes Bakers, Butchers, Confectioners, Dairies, Druggists, Dry Goods Stores, Florists, Grocers, Laundries, News Dealers, Shoe Dealers, Tailors, etc. etc. How many such are there in your town who could use a MOTOKART to advantage? Think it over and then write us for agency terms.

SPECIFICATIONS

2 Cylinder 3⅝ x 4 Motor
Friction Drive
Pressed Steel Frame
Semi-elliptic Springs
Wire Wheels, 26 x 2½

Wheelbase 69 inches
Tread 44 inches
Box Area 51 x 32 x 32 inches
Thermo Syphon Cooling
Capacity 400 lbs.

Price: $400.00

TARRYTOWN MOTOR CAR CO., Inc.

Factory: Tarrytown, N. Y.

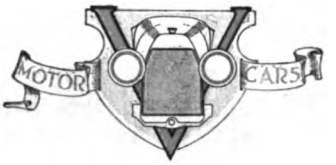
Office: 1790 Broadway, N. Y. City

Address all correspondence to New York Office

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Vaughan Car Co., Inc.
Kingston, N.Y.

A. B. CORDNER, Pres't.
ORLANDO F. WEBER, V. P.
H. W. JOHNS, Treas.
E. S. PARTRIDGE, Sec.
CHESTER GRISWOLD, C. E.



November Twelve
1 9 1 3

FIRST ADVERTISEMENT

We have to offer a motor car selling franchise of extraordinary value to 50 efficient, successful automobile dealers in as many cities.

These fifty men should be representative of the front rank of American automobile distributors, able business men; successful and aggressive, first quality men for a first quality connection.

The possibilities are wonderfully interesting.

Have you ever asked yourself this question: "When will the real automobile that I have been waiting for come along?"

The car that will stand out from the mass so sharply, so distinctively, that even a man who knows motor cars will quickly say at first sight

"HERE'S A REAL AUTOMOBILE"

Gentlemen, we have A REAL AUTOMOBILE.

If it passed you on the street today you would turn, watch it disappear and ask

"What car is that?"

If it stopped in front of your door, stripped of every identifying mark, you might properly say

"Here's a new foreign car--Isn't it a stunner?"

We have built a motor car in America that is not like any other car built in America.

We have put into it something which we do not believe has been put into any other American car.

That means something because there are scores of splendid American cars, wonderful cars, from every standpoint of mechanical excellence.

We have made a six-cylinder automobile that we believe is as near 100 per cent efficient mechanically as any type of motor driven vehicle thus far produced.

This motor car does three great things which in our mind typify mechanical efficiency:

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IT RIDES SMOOTHLY

IT STANDS UP

IT FUNCTIONS ECONOMICALLY

That is the alpha and omega of motor car construction.

We could write pages about our motor, transmission, axles, electric starter and the other essentials of construction,--THEY ARE ALL THERE; nothing is missing.

It is a joy to sit at the wheel of this car. The more you know of silent, easy, powerful motor car action, the more pleased you would be with the easy starting, and stopping, and perfect running of this car.

More speed than the sane motorist needs except in emergencies,--power to take any hill or grade that a car may be asked to climb.

THE NEXT GREAT STEP FORWARD

IN AUTOMOBILE CONSTRUCTION AND

DEVELOPMENT IS NOW ANNOUNCED:

THE APPEAL TO THE EYE

Having an efficient car of the highest class "under the bonnet," we have made a great stride forward in the appeal to the eye.

We now ask you to concentrate on this important, vitally important, feature. We have made a car that has that distinctive quality which instantly evokes admiration and favor--STYLE--

This new car is the smartest, best looking, "best dressed" car, if we may say it, that is to be bought in America--and the price is $2750. We have produced a car with individuality,--a car that a man or woman of good taste will instinctively approve and prefer,--a car that may be put in a show window with the definite assurance that it has that "appeal to the eye" which is so powerful in its possibilities to attract the purchaser who wants style.

We are prepared to show the car to the fifty men, we will take them over smooth roads and rough--they can sit at the wheel and put the car through its paces in their own way, and then we will talk business.

The planning, development and construction of this car was all done silently,--like the car itself. There has been no publicity. Now we are ready.

If you are in the Automobile business "for keeps," in the right way and in the right city, let us hear from you. We can show you something so decidedly interesting, so replete with possibilities of profit and prestige, that you will be glad that this advertisement attracted your attention and that you followed it up with a letter, wire, or call.

Get in touch with us---TODAY.

VAUGHAN CAR COMPANY, Inc.

Orlando R. Weber

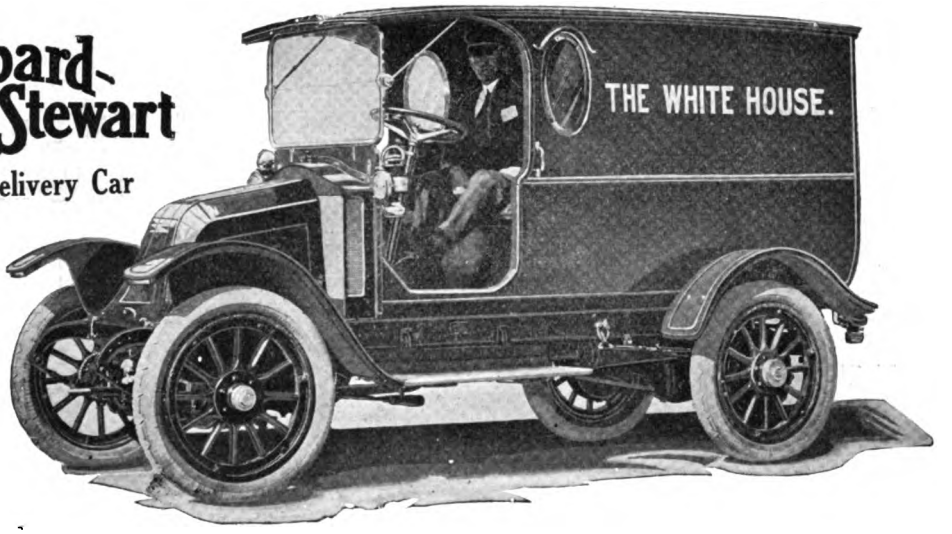
General Manager.

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Lippard-Stewart

The Delivery Car



Lippard-Stewart Worm Drive Delivery Cars

SILENT AND POWERFUL

The Lippard-Stewart is the first delivery car to afford purchasers the advantages of worm drive. Now the way is opened up for the use of solid tires on a live axle with absolute reliability. These new specifications are steps ahead toward furnishing truck owners still greater economy and operating efficiency. They make this car, with a reputation already established for satisfactory operation, even better adapted to many requirements. The original light delivery car of high quality, at a price within reach of the average business man's resources, the Lippard-Stewart now keeps up its record of meeting the demand of users and the trade through modern worm drive.

Why Worm Drive Suits Truck Service

To use the greatest amount of motor power in actual driving energy is one of the big problems of truck design. Wasted power means wasted gasoline. Wasted power means excessive wear. Worm drive corrects waste and wear. Increased ability is obtained. Silence in operation is a characteristic. The smoothest possible application of power minimizes driving strains. Worm drive offers the best method of securing a gear reduction through which the 30 H.P. motor levels the steepest hills. It is the last word in efficiency of all types of final drive.

The David Brown worm and gear—the type made famous by its success on London omnibuses—are used in the Lippard-Stewart rear axle of Timken manufacture. The mechanism is the latest refinement of precise machine work. The foremost English and American engineers are responsible for its design. Lippard-Stewart worm drive has the endorsement of these experts, is backed up by the most rigid factory tests, and has made good in actual service.

The Tire Question---Its Solution

Tire specifications depend upon operating conditions; solid tires may suit a given case better than pneumatic, or vice versa. The new Lippard-Stewart rear system permits of tire equipment of either type. In the past the use of solid tires has been limited to the now obsolete dead axle construction. Now the Lippard-Stewart worm-driven axle lifts the ban on live axles. It is especially built for solid tires—rugged—will not loosen up under jolts and jars. Solid tires can be attached with the assurance that the mechanism will be properly protected from the effects of road travel. The new axle makes interruptions of service less frequent—the car's capacity for work is increased accordingly.

A Chance for the Dealer

The Lippard-Stewart line also includes a worm driven truck, 1½ tons capacity. With these two models, the requirements of most truck users can be supplied. We want to hear from the man who can grasp the big possibilities offered by the sale of the Lippard-Stewart. Our proposition for unassigned territory is a money-maker; write for it—right now.

SPECIAL FEATURES: 30 H.P. Continental motor; Eisemann magneto; cone clutch; Brown-Lipe selective transmission; Timken *bevel drive* (5 to 1 ratio), or *worm driv* (6 to 1 ratio) rear axle; Timken front axle; 35 x 4½ in. Pneumatic tires (*or 34 x 3 1-2 in. front and 34 x 4 in. rear solid tires with worm drive axle only*); sturdy frame; radiator at dash; left hand drive.

Chassis price $1650 (bevel drive) f. o. b. Buffalo. Worm drive, $100 extra above prices of bevel drive models. Bodies to suit a variety of purposes.

LIPPARD-STEWART MOTOR CAR CO., Buffalo, N. Y.

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The Three Essential Points of an efficient Nut Lock Washer are

—proper section

—proper analysis

—proper heat treatment

We are the ORIGINATORS—and the leading producers

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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Springfield Metal Bodies

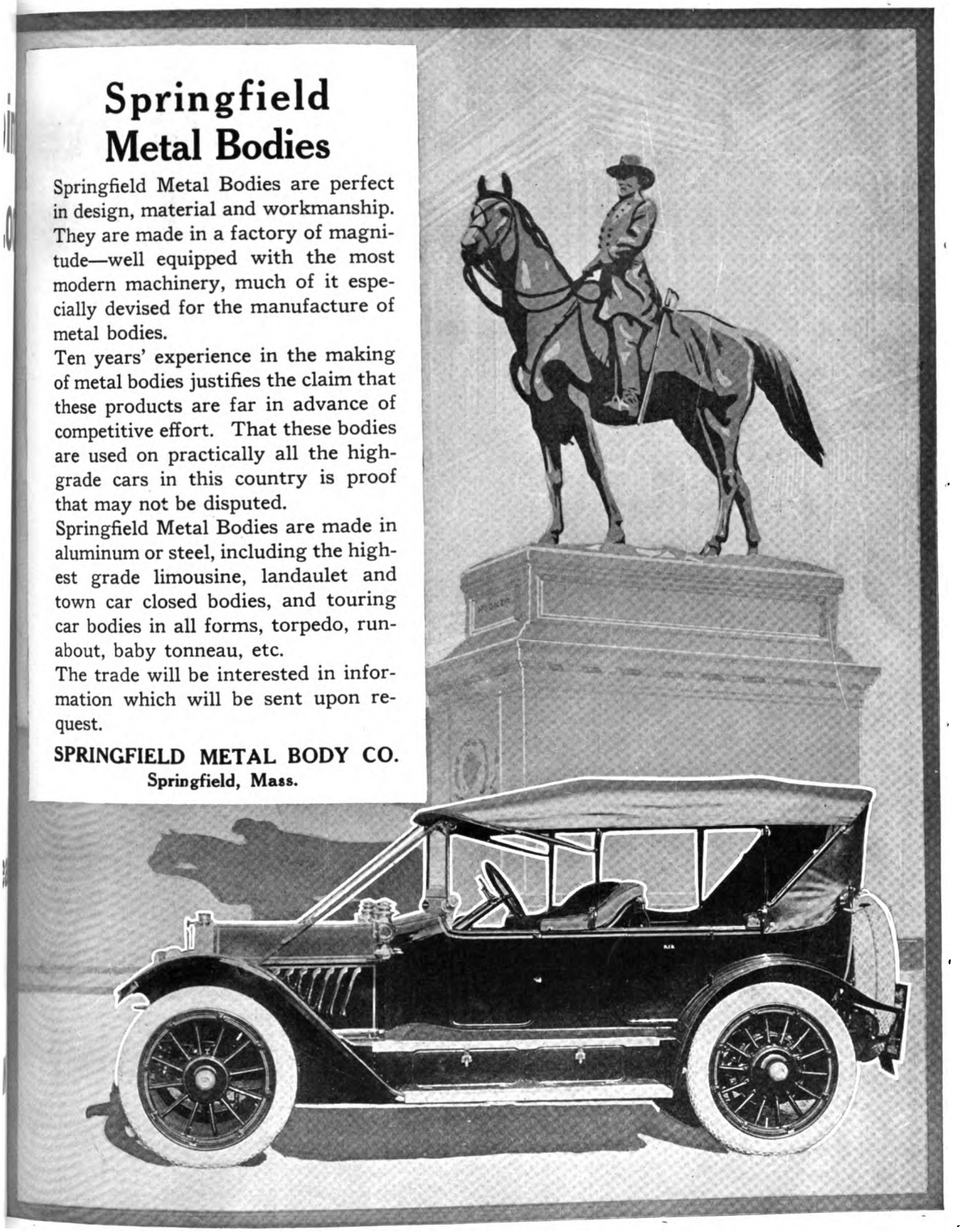
Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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THE ATTERBURY LINE

Selected by the War Department Purely On Merit

The final test made under supervision of the inspector for the War Department---pronounced PERFECT.

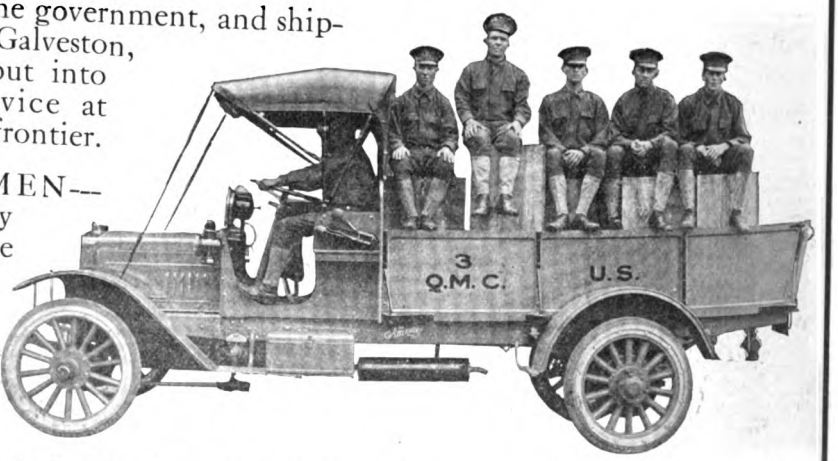
IT DEMONSTRATED

Quickness of Action
Ease in Handling
Freedom from Heating
Quietness in Operation
Power for Steepest Grades
Economy in Fuel Consumption

Distance Traveled 103 Miles, Time, 7 1-2 Hours

Accepted for the government, and shipped at once to Galveston, Texas, to be put into immediate service at the Mexican frontier.

BUSINESS MEN---The Atterbury Truck will prove a great asset in bringing to *you bigger business.*

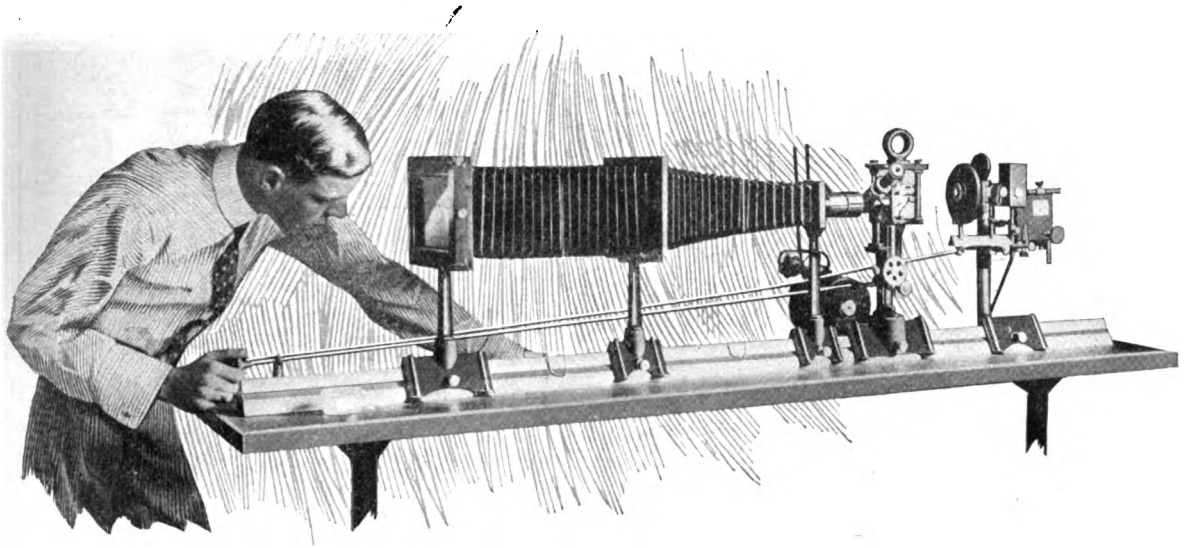


To the dealer who looks ahead---to the dealer who sees that one satisfactory sale made NOW means more sales in the future---to such a dealer we offer a splendid agency proposition.

ATTERBURY MOTOR CAR COMPANY

Black Rock, Dept. "M.W.," Buffalo, N. Y.

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Where Bearings Are Read Like Books

STRETCHED across one end of a room in the laboratory is a curtain. Suddenly the lights go out and and on this background appears a picture. To the casual observer it is a puzzle—to the trained eye of the metallurgist it is an open book from which he reads, as easily as you read here, the structure of the steel from which is made the cups, cones and rollers of the

TIMKEN
TAPERED ROLLER BEARINGS

Thousands of dollars and years of ceaseless experimenting have been spent in determining the best steel for each part and the proper way in which to carbonize and heat-treat those parts to resist wear.

Experience has proved that if the steel maker lives up to Timken specifications, our carbonizing and heat-treating formulas will bring out the wear-resisting qualities we know bearing parts should have.

So the first big broblem is to *know* that the structure of the steel is *right*.

As the X-ray enables the physician to see beneath the flesh and muscles of the human body, so the microscope and the camera lay bare to the eye of the metallurgist the structure of a Timken Bearing.

Nothing must be taken for granted. If the structure of the raw steel is not up to the Timken specification the microscope and the camera tell the story before a machine can touch it. If the carbonizing and heat-treating do not properly change the structure of the finished parts the microscope flashes the danger signal before the bearings can leave the factory.

It was rightness of principles that first brought fame to the Timken Roller Bearing.

We have never been able to improve those principles. But what we have done, and are doing every month and year, is to make the Timken a better bearing in steel—in heat-treatment—in accuracy.

Added to this is the watchful care of the metallurgists who take nothing for granted—who judge solely by results.

The whole interesting story of the Timken Bearing is told in the Timken Primer No. T-1. Sent free post-paid. Ask for it today.

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio, U. S. A.

Every Timken Bearing, large or small, is of just one Timken Quality, through and through

126

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A 1914 Car That Meets All the Demands of Dealers and Owners

This year, more than ever before, does the Chalmers fully meet the ideals of both dealer and public of what a motor car should be. It contains every feature that motor fashion demands. Dealers have only to show the wonderful New Chalmers "Six" and its sale is assured.

This car more than meets the expectations of the experienced motorist and all prospective buyers who are looking for big value. A big, powerful and beautiful motor car, driven by a master motor—a car equipped with every comfort and luxury that the most critical motorists could ask.

This Year Chalmers Cars Are Easier to Sell than Ever Before

In every way—quality, construction and price—the Chalmers measures up to the careful buyer's standard of value. Never before has such a car as this new Chalmers "Six" been offered for less than $3,000. Yet this splendid car sells for $2,175.

We have on our books at this time more orders for this new "Six" than we have ever had for any other Chalmers model, for never before has a car achieved such a name for itself as has the new Chalmers "Six" in the short time since its announcement.

It Took Two Years of Hard Work to Produce the Master "Six"

The 1914 Chalmers "Six" is a new car—**new from the ground up.** It has a different design from any other car; it has a new motor—a smooth-running, powerful motor—that delights the heart of any one traveling behind it.

It has taken two years of hard work to produce this great new "Six." We have drawn from the experience of the whole world in building the new "Six"; and we have tested every feature through many months and thousands of miles of the roughest usage.

The new Chalmers "Six" is ahead, in its powerful, vibrationless motor, its non-jerking cork insert clutch, its quietness and wonderful flexibility, its streamline bodies and in its electric lights and electric starter.

The Chalmers-Entz starter—built complete in the Chalmers shops—is a marvel of simplicity. One move of a switch and the motor starts. And this starter absolutely prevents any stalling of the motor. It is one of the things that is making the "Six" sell itself—one of the many things that will make 1914 a most profitable year for the dealers that sell Chalmers cars.

Features That Compel Sales

We believe that the new Chalmers "Six" has features that every wise motorist today demands—qualities that are only made possible by the following:

Non-Stallable Motor
Left Side Drive—Right Hand Control
Six Cylinders—all moving parts enclosed
Valves of Chalmers Tungsten Steel
Electric Starter—Silent Entz System
Clean Running Boards—Tires carried in rear
Gasoline Tank—leak-proof, rear suspension
Wide Doors—Fitting Flush—no moldings
Streamline Body—Tapering Bonnet—Molded Oval Fenders
Four Forward Speed Transmission
Eleven Foot Wheel Base—All Bodies Interchangeable
Electric Driving Lights—high and low power
Big Tires 36 in. x 4½ in.—Underslung Springs
Continental Demountable Rims
Concealed Electric Vibrator Horn
Chalmers Silk Mohair Top—Quick-Acting Storm Curtains
Genuine Rain-Vision Wind Shield—Warner Speedometer

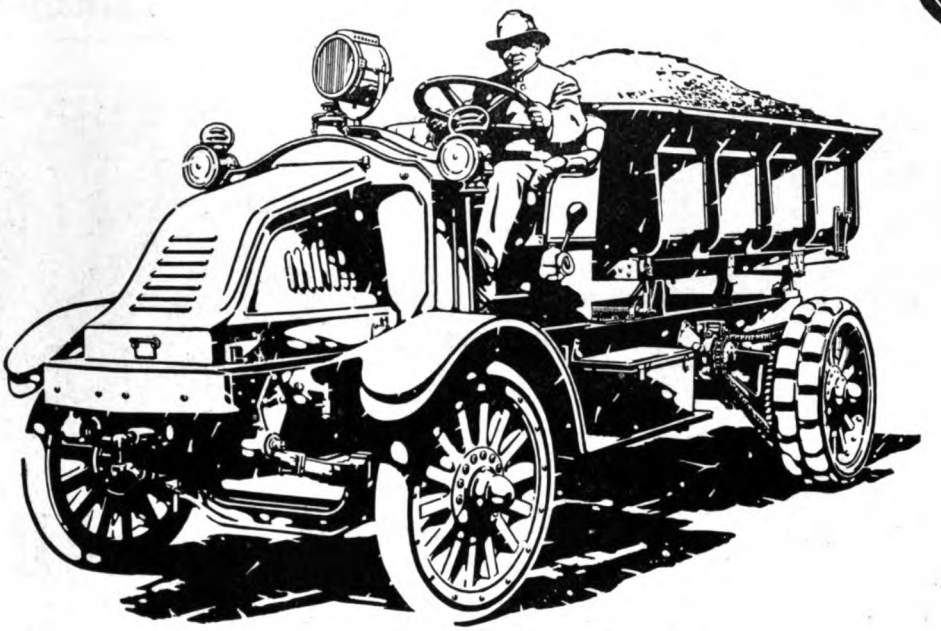
Roadster	$2175
Four Passenger	2175
Five Passenger	2175
Six Passenger	2275
Coupe	2850
Limousine	3600

All bodies interchangeable. Five wire wheels $80 extra

Fully equipped, f. o. b. Detroit

Chalmers Motor Company, Detroit

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Sturdiness and Power

There's a sturdy truck—there's a Kelly! The Kelly is not a pleasure car—except that it brings pleasure to its owner in the saving of money and the betterment of service, but first and most important of all, it is a TRUCK unhampered by the traditions of pleasure car practice in engineering and in manufacture.

"The sturdy Kelly"—that best expresses it—willing, competent, trustworthy and always doing a little more and a little better than was expected of it.

Sturdy Kellys make bigger days and restful nights because they run on schedule.

Write for more information.

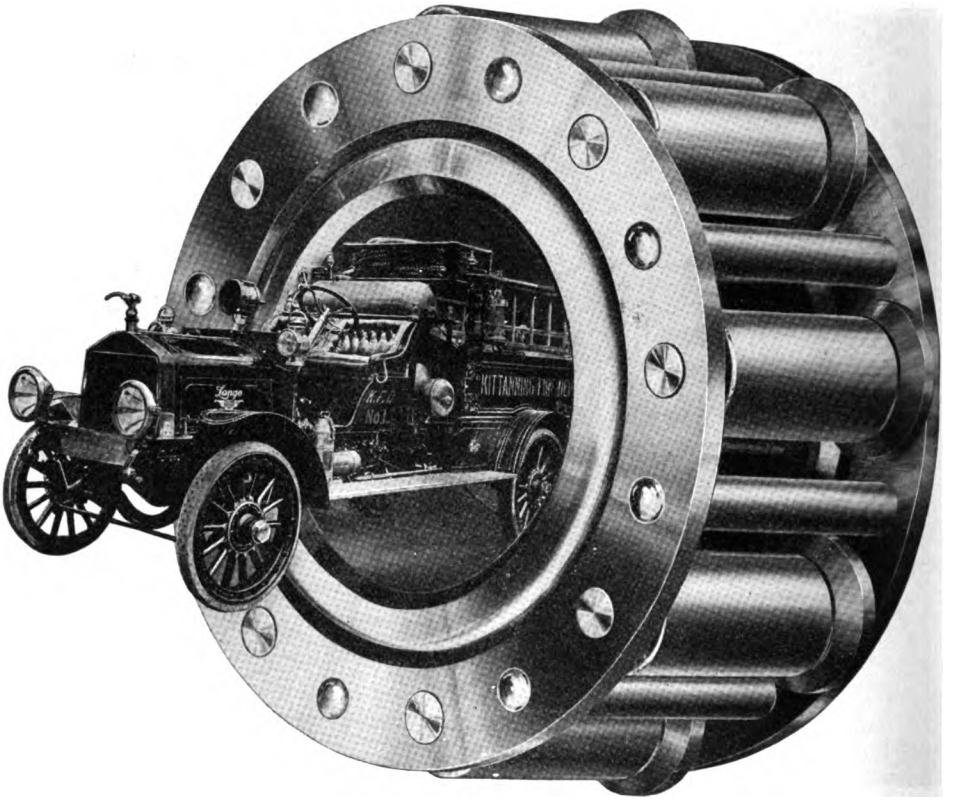
DEALERS!
There is still some desirable Kelly territory open. Write for our agency proposition.

The Kelly-Springfield Motor Truck Company

409 Burt Street, SPRINGFIELD, OHIO

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"BOWER SAVES POWER"



The More Speed the More Waste

The unique construction of Bower Roller Bearings enables them almost to defy friction. The load is borne evenly along the whole length of the bearing. The radial thrust is sustained by a flange, not by the roller itself. Finally, the rollers, because they are always parallel to the raceway, can be made of maximum diameter. Consequently, their speed of rotation is less, ensuring long life.

Bower Bearings never need adjustment.

BOWER ROLLER BEARING COMPANY

DETROIT, MICHIGAN

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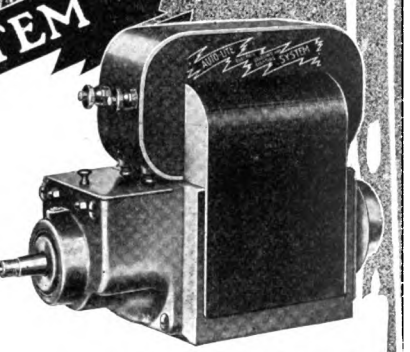
EVERY MOTORIST should have this BOOK & CHART.



AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM



"As Sure as the Whirl of the World."



Write for Your Copy Today

and inform yourself regarding the care and operation of the modern Electric Starting, Lighting and Ignition Systems.

The information given in this handbook and on the operation chart which accompanies it will give you practical aid in the proper operation of all automobile electric systems.

Explans in detail functions of the various parts, how to locate and remedy troubles of all kinds. It is the best written book on the subject so far produced.

The large operation chart which it contains is alone worth the price.

Regular price 50 cents.

Will be sent to you for 10 cents in stamps if you use this coupon.

This Book Covers the Following Subjects

Electric Starting and Lighting Systems
The Generator
The Storage Battery
The Motor
The Controls
The Wiring
The Circuit Breaker
The Governor
The Ammeter
The Switches

The Electric Auto-Lite Co.

The Pioneers and Makers of the 6-Volt Electric System

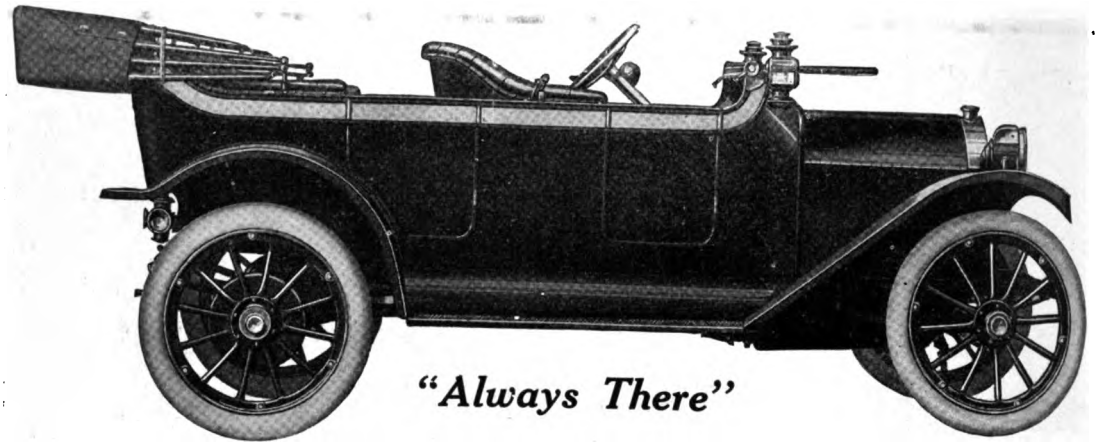
TOLEDO, OHIO

BRANCHES:
New York, Detroit, Kansas City, San Francisco

THIS COUPON SAVES YOU 40 CENTS

ELECTRIC AUTO-LITE CO.,
116 Michigan St., Toledo, O.
Enclosed find 10c. in stamps for which please send me your handbook.
Name .....
Address .....

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The Self-Starter Series is Ready—and Right

¶ The first thousand of the new Detroiter self-starter series is now going through the factory. It was long awaited by over 600 Detroiter dealers, and withheld in spite of tremendous pressure from every selling center, until the starting device, right in every detail, was perfected. The announcement now made is a document of the greatest importance to every dealer in automobiles.

The Detroiter-Remy Starter $125 Extra

The cleanest piece of workmanship ever brought out in this line. On or off in fifteen minutes. Adds less than forty pounds weight. Preserves perfect balance. Spins motor 175 R. P. M. Operates positively at first pressure of foot pedal. Has no parts to stick or collect grit. Oiled from engine lubricating system. Entirely out of way. Automatically ensures easy starting in coldest weather. And can be added, with perfect installation, to any of the thousands of Detroiters already in use.

Detroiter $900

¶ This announcement marks another sure step in the progress of one of the most successful firms in the industry. It opens a new opportunity to salesmen. It is worth immediate attention on your part—YOU who are reading this advertisement—if your territory is not already closed.

¶ There are several medium price cars competing for this trade. They are all good cars. Yet, in two seasons, the Detroiter has outclassed them. It has established the industry's record for percentage of growth.

¶ *Is not this the kind of firm to be identified with?*

¶ There have been vital reasons: THE DETROITER IS A CAR THAT APPEALS TO DEALERS. It has good points, possessed by no other car of its class, that arm its salesmen with ready arguments. Any man who knows anything at all about automobiles can see the Detroiter's distinction at a glance. The full-floating axle, platform spring, long stroke motor, and other big features have been the admiration of every dealer who ever examined the Detroiter. And what a man respects and admires he can't help but sell.

¶ *Is not this such a car as you have been looking for?*

¶ But perhaps the most remarkable thing about the Detroiter's sales is that while many medium price cars draw their purchasers from men who start out to look over the cheap cars and decide they will go just a little higher—the Detroiter forces men to buy who start out to look over the high-price cars and find they can get all the good features in the Detroiter at several hundred dollars less.

¶ *Is it not such a high-grade proposition you want?*

¶ Well, this is it.

¶ And now comes the Detroiter-Remy Starter and the new fall series—a bigger motor among other refinements, and A BIGGER DISCOUNT TO REPAY THE DEALER FOR HIS EFFORTS.

¶ There is still a chance for more dealers to profit.

¶ Get our proposition without delay.

BRIGGS-DETROITER COMPANY, 449 Holbrook Ave., Detroit, Mich.

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American Axles

Supply the Most Efficient Type of the Silent Worm Drive: The Lanchester-Daimler



The above statement is not offered as an argument; it is simply the consensus of leading automobile engineers on both sides of the Atlantic.

While America discussed the worm drive, England tested it. While Americans theorized as to whether its acknowledged advantages could be extended to electric and gasoline pleasure cars, foreign motorists were already enjoying its wonderful efficiency.

For more than two years we have regularly mounted the Lanchester-Daimler—the accepted leader among worm drives—in a full floating *American* Axle fitted throughout with the finest of foreign ball bearings.

We count ourselves fortunate in holding the sole American rights as axle manufacturers to the use of this drive.

Automobile manufacturers who have adopted our axles are equally fortunate; they offer in this worm drive a known quality, together with a mounting that represents the highest ideals of American manufacturing.

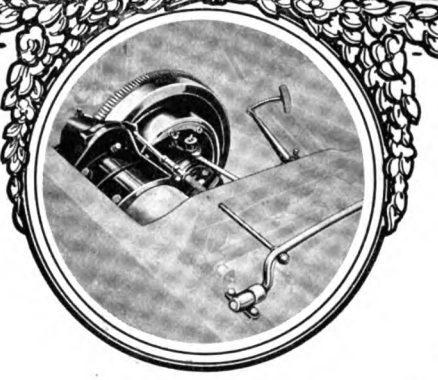
The adjusting and full-floating features of *American* Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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GRAY & DAVIS

Simple **Reliable**



AUTOMOBILES easiest to sell are those equipped with a starting-lighting system of national reputation plus known efficiency.

Take two cars, for instance, both the same price, both have the same finish and are identical in power, etc.

One is equipped with the famous starting-lighting system.

The other carries merely "an electric system."

Which will sell the quickest?

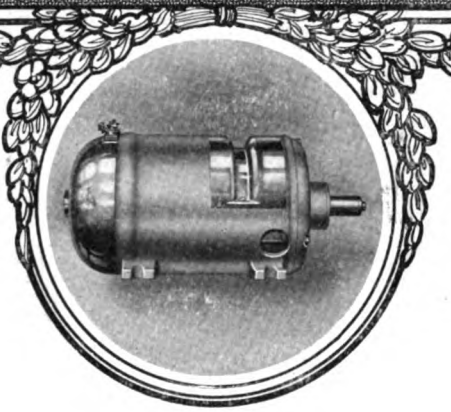
You know the answer.

Write for Instruction Book

GRAY & DAVIS, Inc., Boston, Mass.

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STARTING LIGHTING SYSTEM



Powerful **Efficient**

WE are building between 250 and 280 complete starting-lighting systems every working day.

Our lamp factories will produce over 400,000 lamps this year.

The very magnitude of this business proves the popularity of our products.

Motorists realize the importance of efficient electric equipment.

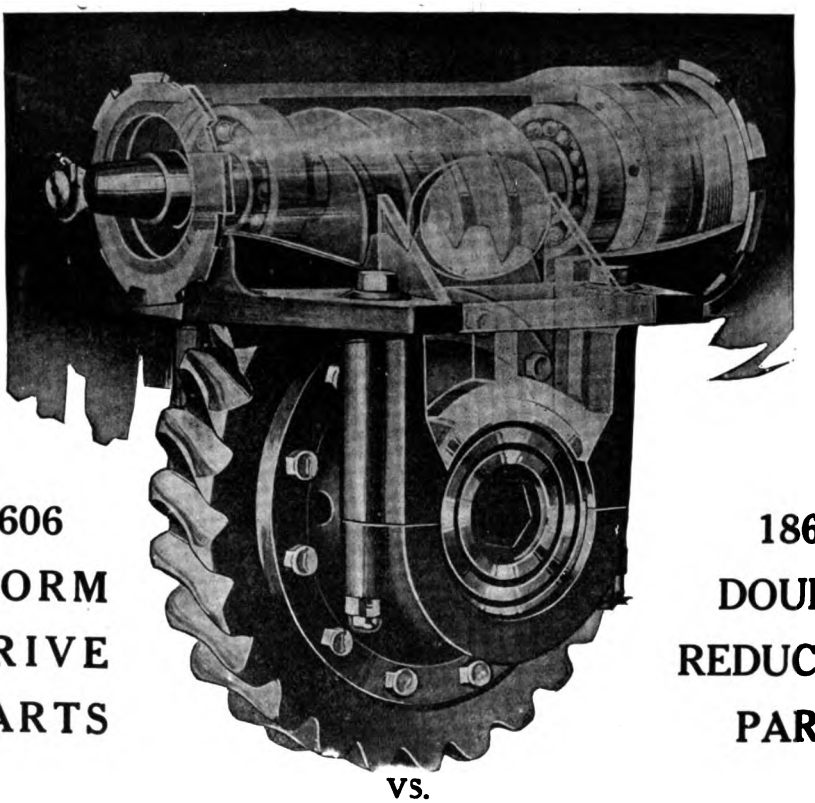
It is fair to assume that the demand for Gray & Davis equipment is the result of *known* efficiency plus highest possible quality.

Write for Catalog

GRAY & DAVIS, Inc., Boston, Mass.

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SHELDON
AXLES AND SPRINGS



606 WORM DRIVE PARTS

VS.

1866 DOUBLE REDUCTION PARTS

A CHAIN is no stronger than its weakest link. Every nut, cotter, washer, head pin casting, forging, chain link and rivet is a necessary unit of the assembly it composes. The failure of one of those units may mean the wreck of your truck, and perhaps the damage of property and loss of life.

Only one-third the number of parts required for a Worm Drive that are required for a two-step reduction of the chain driven type. This is convincing proof that, all things being equal, the single reduction Worm Drive has a three-to-one chance of giving better service than a two-step reduction with three times as many parts.

But all things are not equal. The Worm Drive is a single reduction, transmitting the power direct from the motor to the rear wheels. It is the only drive in which it is possible to secure this result.

The Worm Drive conserves power because it is a single reduction. Every moving power transmitting unit works in oil, reducing friction to a minimum.

Sheldon Worm Drive is non-adjustable. The Worm carrier is machined exactly true by specially constructed machines.

If the carrier is not true, the Worm can not be assembled. Once assembled the Worm and Worm Wheel can be removed and replaced without disturbing their alignment. No adjustment to tamper with.

It is not necessary to provide adjustment for wear. The slight wear of the imported Worm and Worm Wheel only adds to its efficiency.

Of course, the Worm and Worm Wheel wear out, but not during the life of one truck. The experience of the largest user of Worm Drives has proven this.

SHELDON AXLE COMPANY, WILKES-BARRE, PA.

CHICAGO
68 E. 12th Street

SAN FRANCISCO
444 Market Street

DETROIT
1215 Woodward Avenue

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One or two good concerns, rather particular about the CLUTCH

because they know it is the daily, hourly, continuous **point of contact** between driver and car—— will find it mighty profitable to get in immediate touch with KONIGSLOW — CLEVELAND.

Clutches
Clutch Rocker Shafts
Control Levers
Universal Joints

KONIGSLOW CLEVELAND

Clutch Specialists—At Your Service

Our business is CLUTCHES and the assembly which is considered with them. Long experience with this line has won for us the title "Clutch Specialists." We invite you to make use of this experience.

Don't wait till you are ready to place orders—get in touch with us now. Delays are dangerous. Quick action wins.

THE OTTO KONIGSLOW MFG. COMPANY
Cleveland

Detroit Office: J. H. Gould, 1202 Majestic Bldg.



More Than 100,000 Merchants will tell you the McCaskey System is only One Writing. Prevents Disputes and Forgotten Charges. Every Account Totalled and Forwarded with each purchase. Is an Automatic Collector. Limits Credit automatically. Abolishes Bookkeeping—Night and Sunday Work—Posting and Worry.

With Only One Writing **The McCASKEY SYSTEM** The End of Drudgery

First and Still the Best

The following New and Exclusive MECHANICAL FEATURES are on the McCaskey Register Only;

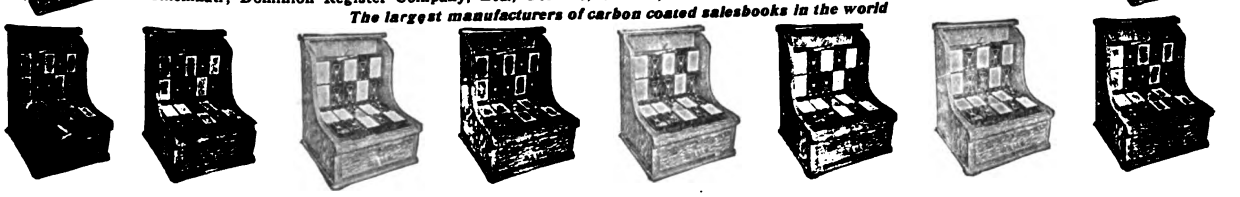
THE EXPANSION FEATURE — Alphabetical, Numerical and Interchangeable Index
ELECTRIC RECORDER — Duplex Section containing Accounts Payable under lock and key
KWIKFIND NON-SLAM LEAVES. Daily Trade Builder
INDISTRUCTIBLE PATENTED LEAF HINGES

A POSTAL WILL TELL YOU MORE

THE McCASKEY REGISTER CO., Alliance, Ohio

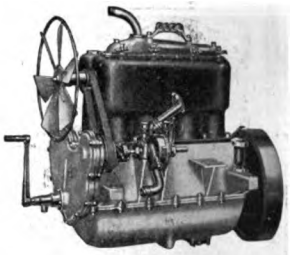
BRANCHES: New York, Chicago, Boston, Washington, Pittsburgh, Memphis, Atlanta, Kansas City, San Francisco, Cincinnati; Dominion Register Company, Ltd., Toronto, Canada; Manchester, England.

The largest manufacturers of carbon coated salesbooks in the world



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Time will tell—is telling—has told in fact, that the

BUDA MOTOR

is "the Part that Sells the Car"

Whatever you can reasonably ask *any* motor to do when NEW, you can ask a BUDA Motor to do when OLD—*and it will deliver the goods without fuss, bother, tinkering or back-talk.* And you can buy BUDAS for less than it costs you to make your own. This is only natural—and inevitable. Today is the day of specialists. We have a motor *plant* (one of the largest in the world); all you have is a "Motor *department.*"

ASK US ABOUT THIS—AND MORE

THE BUDA COMPANY

Factory, HARVEY, ILL., (Chicago Suburbs)
Address all communications to our FACTORY REPRESENTATIVES
BRANDENBURG & COMPANY
1108 So. MICHIGAN AVENUE, CHICAGO 57TH & BROADWAY, NEW YORK, N. Y. FORD BLDG., DETROIT



"WHITNEY" KEYS

for

"The Woodruff System of Keying"

"Whitney" Keys are packed in boxes containing 100 assorted sizes, selected especially for the benefit of the repair trade.

Every garage and repair man should have a box of these assorted keys on hand. They cost little and are very convenient. They may be purchased from the leading jobbers of automobile supplies or we can supply same promptly from the factory.

THE WHITNEY MFG. CO.

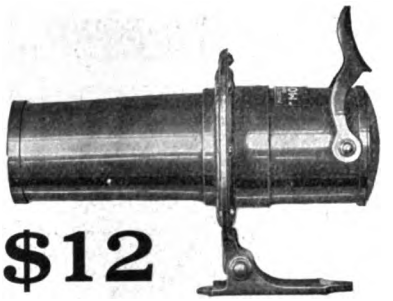
Manufacturers of

High Grade Driving Chains. Keys and Cutters for the Woodruff System of Keying
Hand-Feed Milling Machines

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MOTOPHONE

A Mechanically Operated Horn



$12

NO Adjustments Battery Troubles **NO Electrical Wiring Battery Expense**

A Loud Steady Blast is emitted by a slight touch of the lever—As compelling as any motor horn— Eliminating the constant care of the electric motor, the recharging of storage batteries, adjustments and cost of maintenance.

Manufactured and Guaranteed by

AUTOMOBILE SUPPLY MFG. CO.
220 Taaffe Place Brooklyn, N. Y.

TRADE MARK

Highest steel quality, experienced workmanship and a reputation for prompt shipments have created for

Billings & Spencer

drop-forged products a general and consistent demand on the part of Automobile Manufacturers throughout the entire trade.

A few of the many B trademarked products:

Automobile drop-forgings
Stock and special forgings
Steering connections
Drop hammer equipment
Automobile tools and tool kits
All types of machinists' tools, etc.

Send blueprints for estimates. Prompt shipment assured.

Write for Catalog

The Billings & Spencer Co.
HARTFORD, CONN.

COX OXYGEN CARBON CLEANER



Cold Weather Increases Carbon Deposits

Winter Driving Facilitated

Cold weather calls for thin engine oils. Thin oils frequently cause imperfect or over-lubrication—and it is over-lubrication with incomplete combustion, that produces carbon deposits in cylinders.

Carbon deposits cause a lot of trouble which is hard to trace. You can rarely tell, without dismantling your engine, when it is carbon that is responsible for engine faults. Thus it is decidedly important that cylinders should be cleaned of carbon at regular intervals—to assure maximum of efficiency with minimum of trouble.

And the **most complete and thorough**, while **least expensive** method for doing this is by use of a

COX OXYGEN CARBON REMOVER

No taking down engine! No half-finished scraping of cylinders and pistons! No tieing up the car for a day or more!

The work is done quickly—within from 6 to 10 minutes per cylinder. It is done **completely**. The oxygen removes the carbon to the smallest detail and from every nook and corner—**even to the pores of the metal.**

Taxicab, Motor Truck and Large Private Owners will find this a means of not only saving money but also of easily and constantly keeping the cylinders of their cars in excellent condition. For them, one Cox Oxygen Carbon Remover will pay for itself many times over.

GARAGE OWNERS can make it pay a handsome dividend—while doing the work for their customers in much less time and far better results. Owners can afford and will have you clean their engine cylinders frequently when they know it costs little, takes only a short time and will do the work right. The Cox Oxygen Carbon Remover has paid for itself twice over in one week—and can do the same for you.

Send for full information

Outfit complete (without tank) only $25.00.

COX BRASS M'F'G CO.
ALBANY, N. Y.

1777 Broadway
New York City

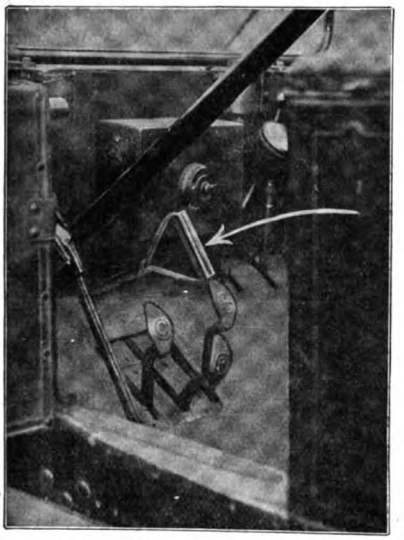
3345 Michigan Avenue
Chicago, Ill.

870 Woodward Avenue
Detroit, Mich.

COX BRASS M.F.G. CO., Albany, N. Y.
Gentlemen: Please send me full information about the Cox Oxygen Carbon Cleaner.
Name.....
Address.....
City.....
State.....
M. W. 10.3

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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

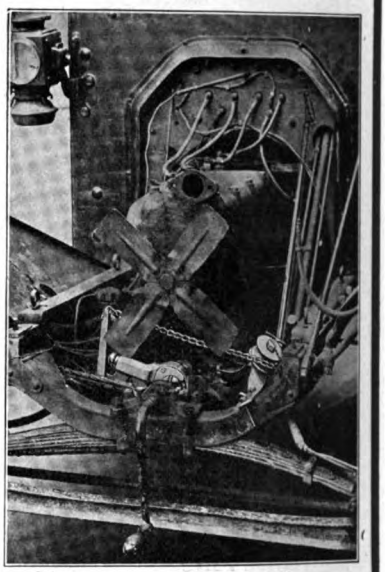
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Universal Manufacturing Co.

Racine, Wisconsin

THE McKIBBIN COON SKIN



Satisfaction Guaranteed

McKIBBIN
Coon Skin Coats

¶ The ideal cold weather garment for the motorist is a Fur Coat.

¶ Raccoon Skin of the highest grade and in its natural color is the present day ideal Fur for Men.

¶ McKibbin Coon Skin Coats are made from prime selected northern skins, ample in cut and unequalled in appearance or in their comfort giving qualities. Literally the best coon skin coat that money will buy, for $160

¶ If you motor through the winter without one of these coats you are subjecting yourself to an unnecessary hardship. Ask your dealer or send direct to the manufacturers.

McKibbin Driscoll & Dorsey
Saint Paul

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Ford
THE UNIVERSAL CAR

Model T Runabout - - $500
Model T Touring Car - 550
Model T Town Car - - 750

With Full Equipment f. o. b. Detroit

Ford Motor Company
Detroit, Michigan

Bosch Plugs



should be listed in the catalogue of every dealer.

Free electros sent to any dealer who will show proof of publication.

Incidentally; Bosch Plugs had more than a 100 per cent. increase in sales—are you getting your share? All orders shipped promptly to those who want to make the fall's profit big.

"Locating the Spark Plug" tells you a lot about plugs. It's free on request.

BOSCH MAGNETO COMPANY
224 West 46th Street New York

75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

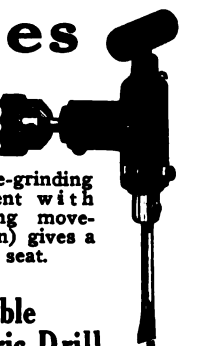
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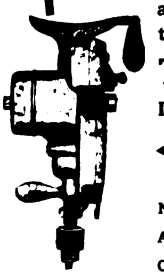


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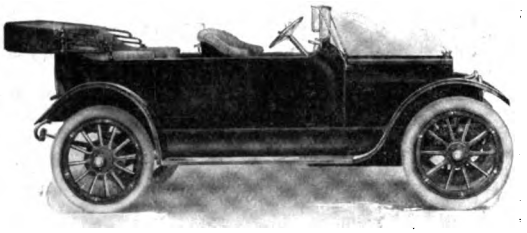
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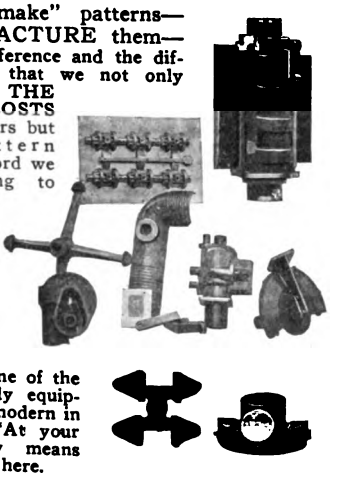
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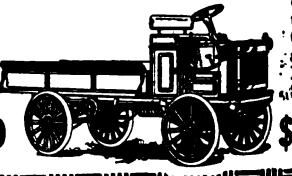
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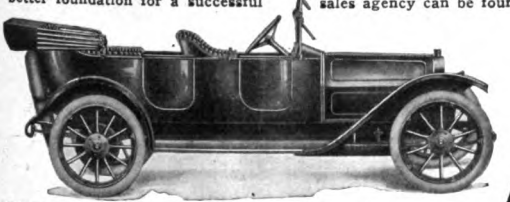
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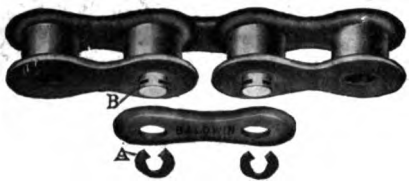
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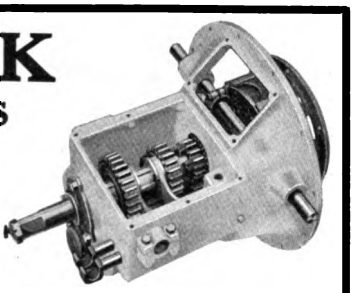
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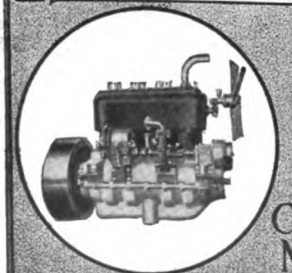
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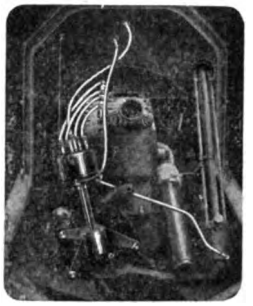
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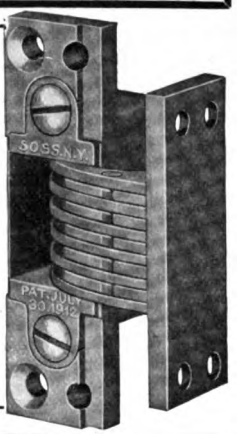
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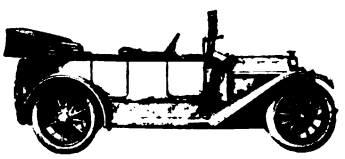
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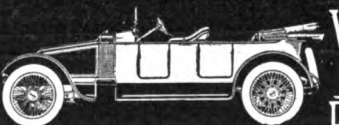
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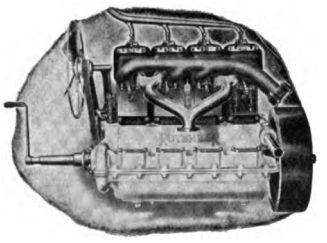
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Manufactured since 1901 for high grade

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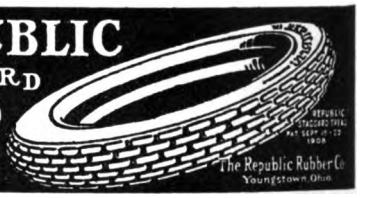


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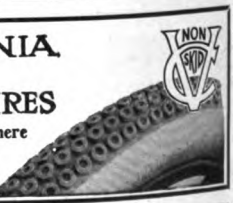
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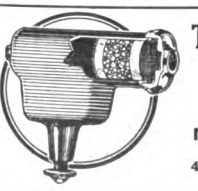
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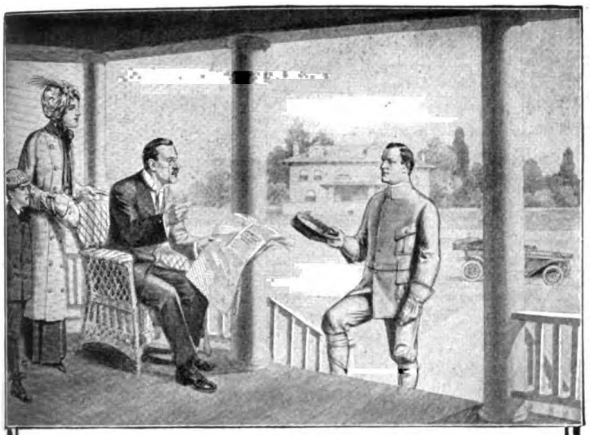
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"I can't afford to take ***any chances.*** We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of ***Weed Chains*** and never start out without them when the roads or pavements are slippery or greasy."

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Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicat Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

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for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

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New York

Manufactured in Canada by
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One of Those Wrapped Tread Repairs That Outlast the Tire

The wrapped tread blow-out repair is the best for the motorist because it is stronger than any other and does not make an unsightly section on the tire.

It is the best type of repair for you to make because it is simple, and requires only about half as much material as the old sectional method. Anybody in your garage can make good wrapped tread repairs without a lot of experience, and **you can guarantee the job.**

SHALER Vulcanizers

are the only vulcanizers that use the wrapped tread method successfully because

1. They are the only vulcanizers that heat the tire from the inside and outside simultaneously.

2. They are the only vulcanizers which have a temperature control that is automatic.

Shaler Vulcanizers heat with steam or electricity. One of their biggest advantages is that you can start with a small equipment and increase it to keep up with your requirements. Shaler Vulcanizers will do every practicable kind of tire repairing.

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Don't fail to write at once for a complimentary copy of the Shaler book, "Common Sense About Tire Repairs." It tells what you want to know about tire repairing and how to start a vulcanizing department. A postal will bring it by return mail.

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A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

U. S. A. Patent Rights for sale of the "Simplex Steel Motor Piston," also the Duplex Piston Ring, largely in British, U. S. A. and foreign cars. British and French patents already disposed of. Apply, THE OXYGEN WELDING WORKS, LTD., New Summer St., Birmingham, Eng.

WANTED—Exclusive agency for Germany for a low priced automobile tire. ERNST DOMASCH & CO., Auto-Material-Handlung, Leipzig, Germany, Fleischerplatz 1 b.

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Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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METZ "22" ROADSTER $475

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ARE GOOD TIRES

Champion Priming Plugs

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Don't wait for cold weather; be ready for it.

CHAMPION SPARK PLUG CO.

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A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

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For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

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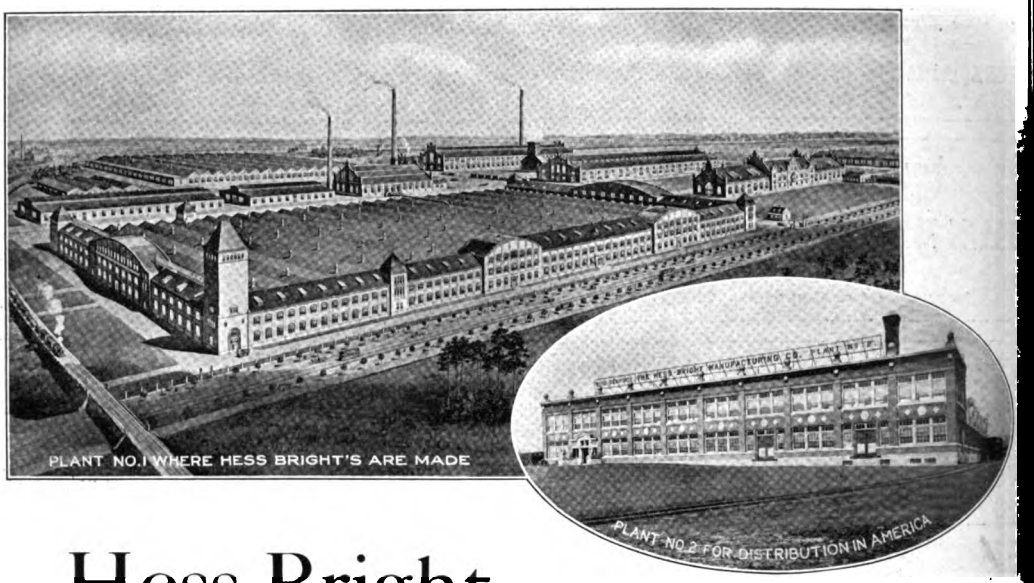
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—put a case around it, attach a sounding board and a projector and you have an "electric horn."

When the car maker or car agent refers to the signal in the equipment as "electric horn," nine times out of ten that signal is of just this construction.

This "buzzer" or "vibrator" horn is the cheapest electrically operated signal possible to make. Its note is a nasal, droning buzz—often even less powerful than the old bulb-horn.

The diaphragm producing the note is vibrated by an electric spark between two points. Unless these are made of platinum iridium, the cost of which is prohibitive, they soon wear down and the horn won't sound.

We know. We have tested buzzer horns—all kinds of buzzer horns. Before the Klaxon was invented, we considered manufacturing buzzer horns. We to-day own the patent of the best buzzer horn we have ever seen.

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IF a car is Klaxonized, the makers and agents always say "Klaxon." They have paid from two to eight times more for signal equipment in order that they CAN say "Klaxon."



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory. Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy.

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Studebaker

THE automobile dealer over whose door appears the name "Studebaker" shares the confidence that name has inspired for 60 years in the buyer's mind.

He has his introduction; the way to the buyer's action is shortened and smoothed.

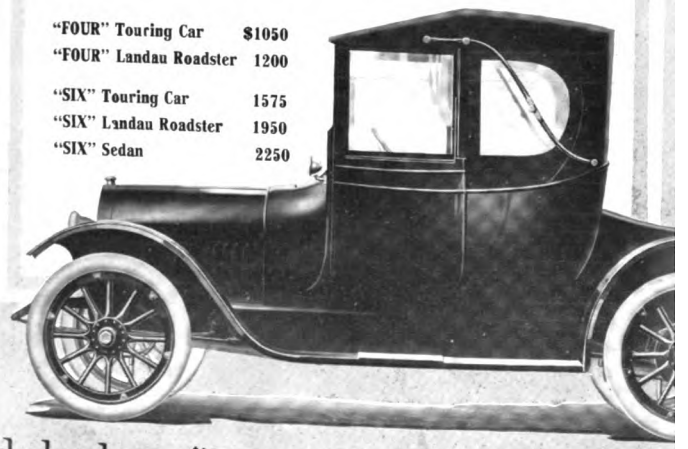
And after the sale is made, he retains and strengthens his customer's confidence by the completeness and promptness of the service he renders when asked.

Such a factor is worth a great deal in the automobile business; and the far-seeing dealer is realizing it.

STUDEBAKER

Detroit, Mich.

"FOUR" Touring Car	$1050
"FOUR" Landau Roadster	1200
"SIX" Touring Car	1575
"SIX" Landau Roadster	1950
"SIX" Sedan	2250



debaker "FOUR" Landau-Roads

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVII
No. 9

New York, November 20, 1913

Ten cents a copy
Two dollars a year

A New and Remarkable Demountable Rim

60 is its first name—Stanweld its last. It is truly a remarkable rim—the first demountable rim to have endless side-flanges that need not be removed from the casing to make tire-repairs.

Think what that means! The elimination of the most objectionable feature of tire-trouble. And both side-flanges are endless—no rough edges or points to chafe or cut the casing.

Others have said, "It is impossible to design a satisfactory demountable rim with endless side-flanges that need not be removed from the casing when making tire-repairs." Yet we've done it—witness the Number Sixty.

The Number Sixty is a light rim—exceptionally light.

It is a strong rim—remarkably strong.

It is a simple rim—decidedly simple.

It is a safe rim—absolutely safe.

And it is an easy rim to operate—so much easier to operate than any other demountable rim that we expect it to supplant all other types.

The Sixty is made in clincher and straight-side styles.

STANWELD RIMS

Freezing of tires to side-rings means nothing to owners of Stanweld Number Sixty Rims—because side-rings don't have to be removed from the casing until you're ready to throw it in the discard.

The Number Sixty demounts same as the Number Forty—the surest, quickest demounting mechanism ever devised.

Then to remove the tube, all you have to do is lift the toggle-lock with a screw-driver, and pull out the inner band.

The toggle lock secures the inner band so firmly that dirt and moisture can't enter the tire-chamber. It makes the inner band practically endless, so rigidly does it hold the ends.

And outside strains and pressures can't open the toggle-lock. In fact, the greater the breaking-strain, the tighter becomes the lock.

It surely will be to your advantage to see and inspect this remarkable new rim before ordering or specifying any other type.

We're prepared to take care of the demands of the trade—manufacturers, jobbers, dealers and repairmen.

Better get prices and full information—now.



COLLAPSING INNER-BAND



INNER-BAND REMOVED—SIDE-FLANGE UNDISTURBED

The Standard Welding Company

Pioneers and World's Largest Producers of Motor-Driven Vehicle Rims

Main Office and Factory **CLEVELAND**

Branch Offices in

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Distributors in Principal Cities of the United States

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Maximum Motoring Comfort Realized in the Perfection of New Automatic Truffault-Hartford Shock Absorber

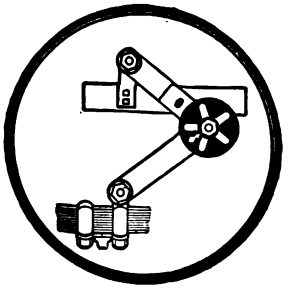
Rough and uneven roads are no longer a barrier to the enjoyment of motoring. It is now possible to ride in stately ease over the poorest roads and still have absolute immunity from jolt, jar and vibration.

This ideal condition is attained through the final perfection of the New Automatic Truffault-Hartford Shock Absorber.

While it includes the same basic constructive principle of the famous Truffault-Hartford, the New Automatic has the additional advantage of supplying three separate frictional tensions instead of one single tension, these three tensions varying in degree according to the character of the road surface over which the car is passing.

As a result of this ingenious three-degree-tension principle the restraint placed on the car springs is never in excess of what is actually necessary—only increasing when the road condition is such that greater resistance is demanded.

The first tension of the New Automatic lasts as long as the good road lasts. Without affecting the flexibility of the spring, it serves to absorb the slight, but noticeable spring oscillation there generated.



Immediately upon a change from a good road to one moderately rough, the second tension is brought into play, doubling the restraint and checking any tendency toward excessive spring action.

The third and strongest tension is reserved for extremely bad roads and those occasions on which forceful contact with some road inequality invites the spring to violent action.

A comfort approximating luxury—exemption from spring breakage and deranged mechanism—assured increase in tire mileage—these are some of the things you enjoy by equipping your car with the

New Automatic

Truffault-Hartford
SHOCK ABSORBER

You can learn more about this device from your dealer, at any of our branches, or by sending for our catalogue. It is adapted to all cars of heavier build and is adjustable to any type of spring. Self-regulating and self-adjusting — needs no attention after attachment. Price $60 per set of four. Other Truffault-Hartfords $50, $40, $25, $15.

Insist Upon Truffault-Hartfords on Your New Car

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EDWARD V. HARTFORD, Pres.

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Ball Bearings



QUALITY

In *Quality* They Lead the World

EXPERTS quickly discriminate between the external features of a motor car and those features that are not observed by a casual inspection. R. I. V. Ball Bearings in a car immediately convince the expert that it is a Quality Car.

Real value has put R. I. V. in a class by themselves and has resulted in a steadily increased output year by year and a continuance of Superior Quality.

There is an advertising value in cars equipped with R. I. V. Ball Bearings.

R. I. V. COMPANY

1771 Broadway New York

IMPORTED SINCE 1904

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It's just a question of whether you want your tires made in bulk or with individual care.

Kelly-Springfield Tires

are made one at a time,
by hand.

Kelly-Springfield Tire Company
Corner Broadway and 57th Street, N. Y.

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K. & S. Auto Tire Company, Limited, Toronto.

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WHY

MONOGRAM OIL

Is *Always* Best For *Your* Engine

Pennsylvania CRUDE oil sells in bulk for approximately six cents per gallon.

In the production of our automobile oil—MONOGRAM—only 4½ gallons of it, or 4½ per cent, is obtained from every lot of 100 gallons of Pennsylvania crude.

Therefore it takes over 21 gallons of Pennsylvania crude to make 1 gallon of MONOGRAM.

If there were no by-products, it would COST one dollar and twenty-six cents, plus the cost of refining, to produce one gallon of MONOGRAM OIL.

This 4½ per cent, is the very marrow of the crude with all its remarkable wearing and lubricating qualities and the other 95½ per cent, can only be used for such by-products as gasolene, kerosene, ordinary engine and machine oils, and black oils.

This is one reason why MONOGRAM OIL has been continually successful under that one brand name from the very start of the automobile industry.

Remember this when unscrupulous dealers try to hand you oil that costs them 15 cents a gallon (or less) as a "just as good" substitute for MONOGRAM at the SAME price for which MONOGRAM can be purchased.

Ask for It by Name

NEW YORK LUBRICATING OIL CO.

Consolidated with

Columbia Lubricants Co. of N. Y.

116 Broad Street, New York City

BRANCHES AT BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SEATTLE, SAN FRANCISCO, LOS ANGELES, SPOKANE, LONDON, ENGLAND; JOHANNESBURG, SOUTH AFRICA

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Overland $950

Completely Equipped
with electric starter and generator—$1075
Prices f. o. b. Toledo

THE Overland is universally famous. We print our American catalogues in 1,000,000 lots; we run German, Italian, French, Spanish and Portuguese editions in 300,000 lots.

Such is the demand!

If the 1914 Overland were not MORE CAR FOR LESS MONEY, do you suppose there would be such universal interest in it?

Catalogue on request. Address Dept. 50

The Willys-Overland Company
Toledo, Ohio,

Electric head, side tail and dash lights
Storage battery
35 Horsepower motor
114-inch wheelbase
Three-quarter floating rear axle
Timken bearings
33 x 4 Q. D. tires
Brewster green body, nickel and aluminum trimmings
Deeper upholstery
Mohair top, curtains and boot
Cowl dash
Clear-vision windshield
Stewart speedometer
Electric horn
Flush U doors with concealed hinges



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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, November 20, 1913 No. 9

WISCONSIN DEALER SECURES VERDICT FOR SIX RED CENTS

Proving that Sales to Married Women Are Not Always What They Seem—One Hubby Who Dared Say "No."

Who is the boss of the household when it comes to buying a car?

Oh, she is, is she? Sometimes she is and sometimes she isn't.

Following up the wife as a means of pushing over a sale is recognized as good practice in many dealership establishments, but if Friend Wife says she'll take the car, signs the order and goes home happy, don't figure up the profit until you get the money.

Theoretically, the woman has a right to sign the order, but in the opinion of a judge in Fond du Lac, Wis., the order is worth about six cents; maybe he decided this way in self-defense and because he is a mere man, but, anyway, what he says goes so far as Mrs. Ernest A. Emigh, of Oakfield, Wis., is concerned.

In introducing this feminine character it may be said that she was on the prospect list of J. W. Meiklejohn, the Ford dealer in Waupun. Meiklejohn had demonstrated his cars to Mr. Emigh and the latter, while he thought it a good little car, wasn't ready to sign an order then. In Act II, Scene I, Mrs. Emigh is seen taking a demonstration without her husband and just as the curtain drops she affixes her name to an order blank and directs the dealer to "bring the car out to the house," which is exactly what the dealer did.

In the next act Meikeljohn is seen "bringing the car out to the house," and at the end of the same scene he is discovered taking it back again. Emigh said his wife had no business signing the contract and that he wouldn't take the car under any circumstances.

The dealer maintained that Emigh, by his actions prior to the sale, had ratified Mrs. Emigh's actions and that the contract was good. When the matter got into court the judge suggested that since no property passed, Meikeljohn be given a verdict of six cents instead of the full purchase price which he asked. Summed up, the verdict amounts to, "You're right, all right, old top, but unfortunately we can't do much for you."

Last act, last scene—Meikeljohn discovered in the act of ringing up six cents on the cash register.

Colby-Minneapolis Merger Falls Through.

After having gone so far as to elect officers of the Standard Motor Co., of Minneapolis, which was to have taken over the Minneapolis (Minn.) Motor Co., maker of motorcycles, and the Colby Motor Co., maker of Colby cars, the merger has fallen through.

It would appear that the parties most interested could not agree as to whether the plant of the amalgamated companies should be established in Minneapolis or Mason City, Ia., and accordingly negotiations were abandoned and each company will go its separate way. What will become of the Standard Motor Co., which was incorporated under the laws of Delaware with an authorized capital of $6,000,000, has not yet become apparent.

Kleiber to Make Trucks in 'Frisco.

After having handled the Gramm line for several years, the Kleiber Co., of San Francisco, has consummated arrangements to manufacture trucks on its own account in its home city. It is planned to build 100 of them during the 1914 season, all of which will utilize Continental engines. The Kleiber Co. has been in business for 17 years, handling horse-drawn vehicles before taking on the motor-propelled sort. Its officers are Paul Kleiber, president; W. M. Remensperger, vice-president; Ed Kleiber, second vice-president; P. E. Rathjens, treasurer; Otto Tum Suden, secretary.

ROLLS-ROYCE SAYS GARFORD COPIED MOTOR MOUNTING

English Car Builder Sues for Infringement of Hinged Suspension Patent—Asks for Accounting and $10,000 Damages.

Claiming that the mounting of the unit power plant in the Garford pleasure car is almost a copy of the mounting of the same unit in the Rolls-Royce car, of England, Frederick H. Royce this week filed suit in the United States District Court for the Southern District of New York against the R. & L. Co., which distributes Garford cars and trucks in the metropolitan district. Royce charges that there has been infringement of his patent, No. 888,535, granted May 26, 1908.

The patent covers a four-point mounting in which the supporting arms at the front contain a hinged compensating arrangement which tends to prevent strain on the power plant when the chassis frame warps during travel over rough roads. The supporting arms for the support of the rear of the unit are rigidly fixed to the chassis frame.

Royce's attorney stated that so far as he knows no other American car builder infringes the Royce patent and that the Garford builders did not do so until a comparatively recent date. The plaintiff asks an injunction and accounting and states that the infringement has damaged him to the extent of $10,000. Royce gives his address as Cook street, Manchester, England.

New Men Enter Premier Directorate.

Following the increase of its capital stock from $1,500,000 to $1,750,000, several new men have entered the directorate of the Premier Motor Mfg. Co., of Indianapolis, Ind. As now constituted, the board is as follows: F. Barnickol, C. O. Baxter, A. L. Reeves, Clarence Stanley, H. O. Smith, Timanus J. Wilson and G. A. Weidely.

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SUBSTITUTING PORCELAINS IN RAJAH PLUGS NOT LEGAL

Added Light Thrown on Patent Licensing Situation — Court Holds Rajah Can Control Use Even if Not the Price of Plug.

When the United States Supreme Court ruled in the Sanatogen case that a manufacturer parts with all title to his goods when he sells them to a retailer, those who had been operating on a price-license system recognized it as a hard blow to price maintenance, but that the manufacturer does not part with all control of his produce was indicated this week in the United States District Court for the Southern District of New York. The court held that the manufacturer still controls the use of its product and can restrain another from selling parts to be used in connection with the product.

The suit in question was brought by the Rajah Auto Supply Co., of Bloomfield, N. J., against the Rex Ignition Mfg. Co., of New York City, which, it was charged, had been selling porcelain parts with the knowledge that they were to be used in Rajah plugs. The court enjoined the Rex company and recognized the Rajah's right to specify what porcelain should be used in a Rajah plug.

Judge Ward in his opinion set aside the contentions of the Rex company that it did not know the porcelains were to be used in Rajah plugs.

"The complainant seeks to hold the defendant as a contributory infringer on the ground that it sells the Rex porcelains knowing that they are intended to be used in the Rajah plug, in violation of the license under which that plug is sold," said Judge Ward. The patent is No. 825,856. "The defendant denies that this is done, but I am satisfied that in several instances its agents have done this deliberately. . . .

"Finally the defendant contends that the license accompanying the sale of the Rajah plugs is void and therefore that it has an absolute right to sell Rex porcelains even with knowledge that the purchaser intends to use them in Rajah plugs.

"The motion is to be decided in favor of the complainant or in favor of the defendant according as the situation is found to be within the case of Henry v. Dick Co., 224 U. S. 1, or within the case of Bauer v. O'Donnell, 229 U. S. 1.

"I think the sale in question is not an absolute sale but a sale accompanied by restriction of the right to use, exactly like the license sustained in the Henry case.

"In the subsequent Bauer case the court held that a restriction as to the price at which a patented article shall be sold is not a limitation as to the use of it and that in such a case the sale is absolute and the restriction invalid. In this way the case was distinguished from the prior decision.

"In view of the marked diversity of opinion among the judges of the highest court in these two cases, an inferior court cannot be confident. The defendant very truly suggests in its brief that on the evidence before the court, if an injunction is granted, it may as well be a final one. If the parties agree on this point a final injunction will be issued. In the meantime the motion for a preliminary injunction is granted."

Dean Creditors in Protective Committee.

In an effort to conserve the assets of the long established Dean Electric Co., of Elyria, O., and as a measure of self-protection, 20 of the larger creditors have formed a protective committee with A. L. Garford as chairman and L. B. Fauver as secretary.

The action was taken on the initiative of A. L. Garford, representing several Elyria banks, and the committee is now inviting other creditors to deposit their claims before Wednesday next, 26th inst., with the Guardian Savings & Trust Co., of Cleveland, which will act as the company's depositary.

While no definite plan has yet been formulated, an audit is being made and it will be the aim of the committee to bring about such a readjustment of Dean securities, or a reorganization of its finances, as will assist it out of the troubled water on which it is now afloat.

New York American-Marion Succumbs.

The American-Marion Sales Co., of New York City, which is controlled by J. I. Handley Co., of Indianapolis, was the object of a petition in bankruptcy filed this week in the Federal court in New York City; the petitioners and their claims are: Louis T. Hollister, $628; Bettes & Ebsen, $132; Auto Supply Co., $31. Clifford C. Ludvigh was appointed receiver under a $1,000 bond with authority to carry on the business for five days. The company was incorporated in June, 1911, with capital stock of $100,000, and handled both American and Marion cars. When Handley's Indianapolis companies which produced them failed three weeks ago, embarrassment of the New York establishment not unnaturally followed.

No Assembling Plants for Cadillac.

Published reports that the Cadillac Motor Co., of Detroit, is erecting an assembling plant in Cleveland—or anywhere else—are wholly untrue. The Cleveland yarn arose from the erection by the Cadillac dealer there of a new store and service station.

WAY FINALLY CLEARED FOR INTERNATIONAL'S MORTGAGE

Court Changes Mind and Wipes Out Restrictions After Imposing Them —Minority Stockholders to Continue Their Fight.

Judge Garretson, of the New York Supreme Court in Brooklyn, underwent a complete change of mind between Thursday last, 13th inst., and yesterday, 19th inst. As a result, the International Motor Co., of New York, has been freed of at least some of the perplexities which beset it since its minority stockholders took the trail in the effort to prevent the execution of a mortgage for $1,200,000 on the Mack truck properties, which are owned by the International company.

On Thursday last, his honor, in the suit brought by George E. Blakeslee, one of the minority stockholders, denied the plaintiff's motion for the appointment of a receiver and also lifted the temporary injunction restraining the company from executing a mortgage on its assets. In doing so, however, Judge Garretson required the latter to give bond for $50,000 to indemnify the plaintiff for whatever loss he might sustain pending the trial of the case upon its merits, and also requiring that satisfactory stipulation be given that no mortgage would be executed nor its unsecured liabilities be increased by a loan in excess of $500,000 without permission of the court. Failing to agree to these terms, Judge Garretson stated that he would continue the injunction during litigation and would hear further argument bearing on the appointment of a receiver.

While this decision apparently favored the International Motor Co., the Blakeslee interests viewed it as a victory. It is certain, at any rate, that it does not afford solace to the International officials, as the requirement of a $50,000 bond placed Blakeslee in the position of being a preferred creditor, thereby paving the way for similar claims from other creditors. Accordingly, the International counsel prevailed on Judge Garretson to reopen the case and yesterday, Wednesday, he completely reversed his ruling, the application of the plaintiff being "in all respects" denied and the injunction vacated, thus clearing the way for the placing of the mortgage which gave rise to the litigation.

Blakeslee, however, declares that the fight will go on. His suit for the dissolution of the International corporation, is distinct from the receivership proceedings, and whether it takes one year or two, he says it will be pressed to a conclusion.

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GENERAL MOTORS FILLS TWO VACANCIES IN DIRECTORATE

Otherwise Everybody, Including Durant, is Reelected—Chairman Nash Pointedly Discusses Existing Trade Conditions.

Save for the election of two new members to fill vacancies, the General Motors Co. at its annual meeting in New York on Tuesday, 18th inst., reelected the present board of directors, which in turn reelected the incumbent officers. The directors are as follows: Joseph Boyer, Emory W. Clark, W. C. Durant, Robert F. Herrick, J. H. McClement, Edwin D. Metcalf, C. S. Mott, M. J. Murphy, Charles W. Nash, Thomas Neal, Albert Strauss, James J. Storrow, N. L. Tilney and Jacob Wertheim.

Herrick, who is a Boston banker, was elected to fill the vacancy caused by the death of Anthony N. Brady, and C. S. Mott, who is mayor of Flint, Mich., and president of the Weston-Mott Co., one of the General Motors subsidiaries, was chosen to succeed Andrew H. Green, Jr., resigned. Director Clark was also chosen a voting trustee to fill the vacancy caused by Brady's death.

The officers reelected are as follows: C. W. Nash, president; Thomas Neal, chairman of the board of directors; J. J. Storrow, chairman of the finance committee; W. C. Durant, vice-president; E. W. Clark, vice-president; Standish Backus, secretary, and James T. Shaw, treasurer.

Vice-president Durant is the same Durant who organized General Motors but who during the last two years has devoted himself to the Republic-Chevrolet projects.

Its financial statement for the fiscal year ending July 31st last, which was printed in Motor World of October 2nd, proved it to have been a banner year for the big corporation and, according to statements of President Nash, the business to date shows no signs of diminishing. The cash received from the sale of cars since August 1st, he states, has exceeded last year's record of $4,500,000, and the cash position of the company is $2,000,000 stronger.

Thomas Neal, chairman of the General Motors board of directors, also permitted himself to be quoted, what he said being very much to the point.

"Talk of a 'panic' in the automobile business is nonsense," he said. "There is no 'panic.' There are many reports of automobile concerns going out of business, but not all of them are, strictly speaking, failures. For various reasons they are liquidating their inventories and going out of business, but not under a load of liabilities. Most of them have been inadequately financed and not managed properly.

"The banks will not be damaged by the automobile failures, as they have been extending much credit to motor car manufacturers for several years.

"Speaking of the General Motors Co. alone, I can say that we have done a better business since the close of our record fiscal year on July 31 than we anticipated. Just what the future holds cannot be foretold, and if there is any serious depression in general business it will no doubt affect the automobile industry in some degree. There is, however, a normal demand for motor cars which must be filled. This demand under slack conditions would probably be somewhere between 200,000 and 300,000 machines.

"The dissolution of the small producers will result in larger sales for the big organizations which are well supplied with cash and which have their operating costs reduced to a minimum."

Merging Goodrich and Diamond Branches.

The Goodrich and Diamond tire branches in both Indianapolis and Cincinnati have been consolidated. In the former city, the Goodrich store will be closed and the business concentrated in the Diamond establishment under the management of H. A. Little, former head of the Goodrich branch. O. C. Reevill, former Diamond manager, will serve as special representative. In Cincinnati, the Diamond, located at 807 Race street, will be retained as the office and salesroom, while the Goodrich place will be utilized as a service station. The Cincinnati manager will be C. W. Simpson.

To Produce Electric Trucks in Denver.

For the purpose of producing shaft-driven electric trucks, the Capitol Hill Truck Mfg. Co. has been formed in Denver, Col., with Charles A. Scott as its president. He already is largely interested in the Capitol Hill Garage in that city. He expects to erect a plant on Speer Boulevard and produce between 50 and 100 vehicles during 1914. The truck, of which several are in use in Denver, is distinguished by a battery divided into three parts, one part carried under the bonnet in front of the dash and the other parts being slung, respectively, on running boards at the sides.

Ford May Lease Plant in New Brunswick.

The Ford Motor Co. of Canada is negotiating for the lease of the Maratime Motor Car Co.'s plant in St. Johns, New Brunswick, but the deal has not yet been closed. Only a few months ago it was stated that the Maratime company had secured the right to reproduce Palmer-Singer cars in Canada.

MORE THAN MILLION MAY BE LOST BY R. C. H. CREDITORS

Those Who Waived Claims When Committee Took Charge Likely to Lose All—$135,000 Bid for Assets is Rejected.

As predicted, the bid of $135,000 tendered by J. F. Hartz, Harry S. Grant and their associates for the entire assets of the R.C.H. Corporation, of Detroit, was rejected by the referee in bankruptcy when it came before him for confirmation on Monday last. Action was taken on recommendation of the receiver, the Security Trust Co., which also has been named as trustee. The referee, Lee E. Joslyn, believes that the personal property alone should bring at least $400,000, apart from the valuable real estate at stake.

Harris Bros. & Co., the Chicago house wreckers, who desired to bid on the property when it was offered for sale on the 11th inst., and who did not do so because of lack of time to make proper inspection, offered a bid of $150,000 for the personal property and it is possible that this offer may be increased after a more thorough inventory is made. At any rate, new bids will be invited by the trustee, all of which must be in hand not later than November 27th.

At the trustee's hearing on Monday it developed that creditors whose claims amount to $1,373,259 may realize nothing. This unpleasant prospect arises from the fact that on October 25, 1912, these creditors waived their claims in favor of corporations that were willing to supply material to permit the continuance of the business by a creditors' committee, which took charge of the R.C.H. property on that date and elected officers of its own, J. F. Hartz being the creditors' president.

According to the receiver, creditors of record on October 25, 1912, whose claims amount to $270,777, and those who did not sign the agreement of that date, their claims being $24,280, will receive between 40 and 75 cents on the dollar.

Harrises Now Buy up Milwaukee Motor.

At the receiver's sale of the Milwaukee Motor Co., of Milwaukee, Wis., on Tuesday last, 18th inst., the plant and equipment were bid in for $86,000 by Harris Bros. & Co., who constitute the Chicago House Wrecking Co. There is no doubt that the court will approve the sale at this price. The company, which built gasolene engines, was petitioned into bankruptcy on June inth last with liabilities amounting to $280,000.

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LIFTS BLAME FOR FALLING ELEVATOR FROM GARAGEMAN

If Mechanism Was Properly Installed, Inspected and Maintained, Owner of Damaged Car Must Stand Loss—Court's Opinion.

When a garage elevator falls and damages a car owned by a patron of the garage it does not necessarily mean that the garageman must pay for the damage done to the car, according to an opinion handed down last week in the Appellate Division, Second Department, of the New York State Supreme Court. If the garageman can prove that the accident was entirely unforeseen and through no negligence on the part of himself or his employes, the owner of the car must stand the loss.

The suit that brought this ruling was filed by James B. Reagan, proprietor of the Knickerbocker Hotel in New York City, against Burr & Co., body builders; Reagan's Pierce-Arrow was taken to the Burr place of business to have a new body fitted, and in the course of that work the company's employes were taking the car from an upper floor to the basement on the elevator.

The elevator was of the type which may be started and stopped from any floor by pulling on ropes or chains which extend from the top to the bottom of the elevator shaft; in the elevator near the chains was a bolt which projected three-eighths of an inch through a nut, and this projection caught in the control chain and made it impossible for the Burr workmen to stop the elevator, which went at rapid speed until it struck the bottom. Then the counterweights broke loose and fell upon the car.

Experts testified that the accident was unforeseen and extremely uncommon and that the Burr company was not negligent in the operation of this piece of machinery. The lower courts gave Reagan a verdict for the full value of the car but this the Appellate Division reversed and directed a new trial.

"Upon the whole case," said the court, "as presented to us, not only did the plaintiff fail to prove negligence upon the part of the defendant in the installation or operation of this elevator, but the preponderence of the proof is that the elevator was a proper and sufficient one at the time of its installation, that it was maintained in proper condition by frequent and adequate inspection, and that the existence of this slight projection in the bolts beyond the surface of the nuts through which they passed was not one from which it would reasonably be apprehended that danger would arise.

"As a matter of fact, no one had foreseen the possibility of such an accident occurring due to this cause. We are of the opinion, therefore, that the finding that the defendant was negligent in the maintainance and operation of the elevator is against the weight of evidence and the judgment, and the order must be reversed with costs and a new trial granted."

Mosler Planning Royalty Proceedings.

Although the upholding of the Canfield patent, No. 612,701, by the United States Circuit Court of Appeals, gave to A. R. Mosler & Co. control of production, no license agreement or other legal forms have yet been formulated, but it is certain that proceedings will be promptly instituted against other plug manufacturers; the case will not be officially remanded to the lower court until tomorrow and nothing can be done until after that date, anyway.

As to the date from which royalties will be computed, W. A. Redding, Mosler's attorney, stated this week that it would depend largely upon when the individual suits were started and injunctions secured; he also said that probably no attempt would be made to collect back damages from concerns which have been established in business any appreciable length of time. The statute itself bars collection beyond six years. The Champion Ignition Co., of Flint, Mich., secured a license under the patent three years ago and is therefore the only manufacturer immune from prosecution.

Junk Man Involved in Tire Chain Deal.

Atlas grips, a thorn which the Weed Chain Tire Grip Co. successfully removed from its own side some time ago, are now —a carload of them, at least—a thorn in the side of D. S. Gray, a metropolitan junk dealer; Gray bought a carload of them at auction and may have congratulated himself on his fine purchase, but, if so, his dreams of a young chain business were shattered this week when the Weed company filed suit against him in the United States District Court for the Southern District of New York. He is charged with infringing the Parsons patent, No. 723,299, and the court is asked to enjoin him from selling the grips.

Mitchell Discontinues Philadelphia Branch.

The Mitchell-Lewis Motor Co. has discontinued its branch in Philadelphia and transferred the manager thereof, Charles P. Skinner, to the management of its branch in New York. In Philadelphia hereafter the Mitchell car will be handled by an agency, the Fanning Paxson Co., of 158 North Broad street.

UTILITY CAR COMPANY IS "PANNED" BY EX-EMPLOYE

Smith Says He Helped Promoters Nearly Two Years and Would Like to See Some Real Money —Demands His Wages.

The Utility Car Co. of Delaware, the Utility Car Co. of New York and the Auto-Tri Mfg. Co., of Buffalo, are three closely-related corporations that set out several years ago to produce a three-wheeler package delivery vehicle and did turn out a few which looked good, but little was heard of the companies until this week, when Albert L. Smith filed a suit in the New York City Court against the first two for back wages and with his suit filed a long affidavit as to what he thinks of the Utility promoters. He secured a judgment for $1,893.26 this week but let it be set aside when the defendants so requested.

George R. Bidwell, one-time collector of the port of New York and an old bicycle man, is president and Charles E. Locke is named by Smith as treasurer of the two Utility companies. Smith classes the affair as a promotion scheme and suggests that the present whereabouts of money he turned over on stock sales will stand investigation.

Smith claims that he was engaged February 1, 1912, to sell stock of the Delaware Utility company—which he states is a holding company for the New York Utility company—and to manage the package delivery business of the defendants and to look after the interests of both generally in the city of New York. He was to get $50 a week. He worked from February 1, 1912, to October 30, 1913, when he left because his wages for many months previous were unpaid. Out of $4,500 he drew $2,629.79.

The Utility project is going, or has gone, the way of all other three-wheelers, according to Smith, and, anyway, never did much more than promote itself. He alleges that both companies "have been idle, dormant companies for about one year past, and have made and sold no cars to speak of but have been actively engaged in selling stock and maintaining the package delivery service that I managed.

"They have always claimed that they were promoting a vast enterprise and that the business of making and delivering the cars would not be started until they had about $1,000,000 in the treasury, and that they would start with putting 1,000 cars on the market and that they would not start in a small way; and so all activities were spent in selling corporate stock and using the moneys that came in, so I am informed, for the expenses of promoting."

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The Week's Incorporations

Macon, Ga.—Ellis Garage, under Georgia laws; authorized capital, $6,000. Corporators—G. F. Ellis and J. C. Ellis.

Chicago, Ill.—Triple Action Spring Co., under Illinois laws; authorized capital, $25,000. Corporators—Oliver G. Temme, Richard H. Mather and Claude R. Church.

Boston, Mass.—Shimpf Starter Co., under Massachusetts laws; authorized capital, $50,000. Corporators—L. C. Marshall, J. Henderson and M. J. Page, all of Boston.

Boston, Mass.—Dart Motor Truck Co., under Massachusetts laws; authorized capital, $5,000. Corporators—Walter F. Magill, Gertrude A. Magill and Stephen J. Richards.

Cambridge, Mass.—Massachusetts Automobile Co., under Massachusetts laws; authorized capital, $10,000; to deal in motor cars. Corporators—Roland C. Jewett and others.

Detroit, Mich.—Keystone Tire Repair Co., under Michigan laws; authorized capital, $1,000. Corporators—William F. Hausen, Noah L. Henninger and James E. Gowan.

Bronx, N. Y.—Washington Taxi Service Inc., under New York laws; authorized capital, $500. Corporators—Harry Rieders, Abraham Bernstein and Joseph Brucker, all of 1199 Fulton avenue.

Joliet, Ill.—Auto Specialty Co., under Illinois laws; authorized capital, $2,500; to conduct a general automobile business. Corporators—Fred D. Byrd, Fred W. Walter and Ralph W. Walsh.

Detroit, Mich.—Detroit Nassau Tire Co., under Michigan laws; authorized capital, $1,200; to manufacture automobile tires. Corporators—Stanley Houghton, Charles Catter and James Dillon.

Petaluma, Cal.—Automobile Sales Underwriting Co., under California laws; authorized capital, $100,000; to finance automobile dealers. Corporators—Charles L. Clise, San Francisco, and others.

Crawfordsville, O.—Miller Vehicle Heater Co., under Ohio laws; authorized capital, $5,000; to manufacture road vehicle heaters. Corporators—W. H. Miller, Fred F. Doherty and Austin H. Long.

Logan, Utah—Utah-Idaho Auto Co., under Utah laws; authorized capital, $25,000. Corporators—Morgan Knapp, J. P. Griffin, Wilford O. Johnson, John Everton, Franklin, Ida., and W. H. Stewart.

Boston, Mass.—Henderson Motor Co. of New England, under Massachusetts laws; authorized capital, $25,000; to deal in motor cars. Corporators—James A. Binney, Porter B. Chase and E. Barton Chapin.

Milford, Mass.—Baker Motor Sales Co., under Massachusetts laws; authorized capital, $5,000; to deal in motor cars. Corporators—William H. Baker, William D. Leahy, Frank P. Dillon and John C. Lynch.

Chicago, Ill.—Austin Safety Storage Co., under Illinois laws; authorized capital, $25,000; storage and teaming, automobiles and horses. Corporators—Francis Woodsmall, George Delaney and Bazel W. Veirs.

Rushville, Ind.—Power Transmission Clutch Co., under Indiana laws; authorized capital, $30,000; to manufacture appliances for motor cars. Corporators—O. E. Woolridge, Jesse Wiley and John Striegle.

Utica, N. Y.—Xardell Bros. Co., under New York laws; authorized capital, $20,000; to manufacture motor car supplies. Corporators—Joseph A. Xardell, Charles A. Xardell and W. K. Teefey, all of Utica.

Lowell, Mass.—Howard Street Garage, under Massachusetts laws; authorized capital, $2,000; to operate a garage. Corporators—David Ziskind, Michael Cohen, Clarence J. Howarth and William H. Jolly.

Akron, O.—Tanner-Hower Mfg. Co., under Ohio laws; authorized capital, $50,000; to manufacture brass cylinders, gauges and various motor car parts. Corporators—M. Otis Hower, Perry E. Tanner and others.

La Crosse, Wis.—Motor Truck Service Co., under Wisconsin laws; authorized capital, $10,000; to deal in motor trucks. Corporators—F. J. Noetzel and Herbert Lewis, of La Crosse; W. H. Ristow, West Salem.

Ludlow, Ky.—Eureka Resilient Wheel Co., under Kentucky laws; authorized capital, $10,000; to manufacture a patented automobile wheel. Corporators—G. A. Simpson, Ludlow; Charles Schroeder, Cincinnati, O.

Chicago, Ill.—Chicago Great Western Motor Car Co., under Illinois laws; authorized capital, $15,000; to manufacture, buy and sell motor cars. Corporators—S. Darmstadter, M. Darmstadter and A. J. Schuett.

Cincinnati, O.—Franklin Motor Car Co., under Ohio laws; authorized capital, $20,000; to operate a garage. Corporators—Newman Samuel, R. C. Anderson, F. H. Aufderbecke, J. C. Lueders and John Frederick Koch.

Kearney, N. J.—Arlington Motor Car Co., under New Jersey laws; authorized capital, $100,000; to carry on an automobile business at 720 Devon street. Corporators—S. R. Bewley, J. R. and M. P. O'Connor and S. T. Urwin.

Chicago, Ill.—Chicago Grant Motor Sales Co., under Illinois laws; authorized capital, $5,000; to manufacture and deal in motor cars, parts, accessories, etc. Corporators—C. C. Mowbray, Edwin H. Abbott and Eugene W. Fassett.

Chicago, Ill.—Luxmore Differential Co., under Illinois laws; authorized capital, $7,500; to manufacture and deal in motor car accessories and machinery. Corporators—Edbert Robertson, Lazarus Krinsky and John L. Anderson.

Chicago, Ill.—Motor Devices Co., under Illinois laws; authorized capital, $3,000; to manufacture and sell motor car accessories, machinery and motor car devices. Corporators—G. M. Shonts, George A. Kelly and Rupert D. Donovan.

Buffalo, N. Y.—Meyer Motor Car Co., under New York laws; authorized capital, $50,000; to conduct a general motor vehicle business. Corporators—Arthur C. Meyer, Clayton H. Meyer and Franklin B. L. Stone, all of Buffalo.

New York, N. Y.—State Auto Repair & Sales Co., under New York laws; authorized capital, $5,000. Corporators—Robert Kaiser, 530 West 124th street; Lou J. H. Schmitt 529 East 150th street; Arthur Larnett, 1029 College avenue.

Fall River, Mass.—J. E. Newton Co., under Massachusetts laws; authorized capital, $50,000; to manufacture and repair bicycles, motorcycles and motor cars. Corporators—Newton R. Gifford, James E. Newton and Fred Crossley.

New York, N. Y.—Leather Tire Goods Co., under New York laws; authorized capital, $7,000; to deal in motor car supplies, tires, etc. Corporators—Hans Gurlitt, 1608 Broadway; H. V. Dodge and Wm. Loebman, both of 1610 Broadway.

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BRITAIN CAUSES EXPORTS OF CARS TO REGISTER A GAIN

Recently One of Heaviest Losers, United Kingdom Leads in Increases in September—Tires Gain and Engines Lose.

Conditions in the automobile export trade in the month of September differ from other recent months in that the United Kingdom—which had decreased its American purchases—made a larger increase than all other geographic divisions and saved the exports from being registered in the loss column. The United Kingdom gained by 316 cars, or 206 per cent., and by $206,019, or 198 per cent., over its takings for September, 1912, and helped the total export of cars to increase by 169, or 11 per cent., and $118,848, or 8 per cent.

British Oceania, which generally follows in the lead of its mother country, gained by 30 cars, or 13 per cent., and $24,676, or 12 per cent. The West Indies and Bermuda, the latter of which is a British possession, advanced by 25 cars, or 109 per cent., and by $20,515, or 104 per cent. The only other division to mark an increase was Other Countries, which moved upward by 167 cars, or 159 per cent., and $116,415, or 120 per cent. Canada, generally one of the largest purchasers of American cars, is still the largest, but it lost by 218 cars, or 46 per cent., and $128,370, or 27 per cent.

Another division which has in the immediate past been a large purchaser of American cars is South America, but in September this country decreased its purchases by 24 cars, or 16 per cent., and $38,395, or 53 per cent.

Asia and Other Oceania bought 41 less cars, a decrease of 23 per cent., and the value shrank by $10,428, a falling off of 7 per cent.

Of the total exportation of vehicles, trucks gained 8 in number, or 20 per cent., and $5,057, or 6 per cent. Pleasure vehicles advanced by 161, or 10 per cent., and $113,791, or 8 per cent. Parts increased by $180,847, or 66 per cent., and the total value of cars and parts by $299,195, or 17 per cent.

The average value of the trucks shipped abroad in September, 1912, was $2,149, and in September, 1913, $1,876, a decrease in valuation of $273, or 12 per cent. The pleasure cars during the former period averaged $872 in value and in September, 1913, $857, a decrease of $15, or 2 per cent. The average value for the United Kingdom in September, 1912, was $680, and in September, 1913, $661, a decrease of $19, or 3 per cent.

Engine exports fell off by 89 per cent. in number and 91 per cent., in value, the shipments dropped from 517 engines valued at $110,068 in September, 1912, to 52 engines valued at $9,836 in the same month of the present year. This is a decrease of 465 in number and $100,232 in value. Foreign sales of tires during September, 1912, amounted to $292,809 and in September, 1913, to $321,815, a gain of $29,006, or 10 per cent.

The total value of cars, parts, engines and tires exported during September, 1912, amounted to $2,123,692 and in the same month of the present year the volume was $2,352,161, an advance of $228,469, or 11 per cent. In nine months ending with September, 1912, cars gained by 2,547, or 13 per cent., and in value by $3,049,559, or 17 per cent. For these same periods the total value of cars, parts, engines and tires advanced by $5,006,435, or nearly 20 per cent. The figures in detail follow:

	September 1912 Quantities.	September 1912 Values.	September 1913 Quantities.	September 1913 Values.	Nine Months Ending September 1911 Quantities.	Nine Months Ending September 1911 Values.	Nine Months Ending September 1912 Quantities.	Nine Months Ending September 1912 Values.	Nine Months Ending September 1913 Quantities.	Nine Months Ending September 1913 Values.
France	62	$45,538	48	$41,745	352	$393,448	543	$414,493	655	$510,331
Germany	37	26,022	27	13,504	90	106,382	347	270,769	858	747,543
Italy	33	23,519	7	4,555	161	188,557	241	214,651	259	222,008
United Kingdom	153	104,080	469	310,099	2,563	2,170,264	3,942	2,944,118	3,900	2,934,237
Other Europe	114	73,620	94	67,413	633	601,486	1,278	1,044,658	1,483	1,263,828
Canada	471	473,465	253	345,095	4,107	4,493,287	5,988	7,213,639	5,260	7,050,317
Mexico	31	71,564	15	33,169	187	311,427	181	289,873	175	321,379
West Indies and Bermuda	23	19,750	48	40,265	213	249,799	238	250,698	370	361,428
South America	150	153,919	126	123,817	664	867,292	1,395	1,615,378	2,089	2,372,980
British Oceania	231	194,471	261	219,147	1,467	1,353,398	2,585	2,355,520	2,418	2,275,226
Asia and Other Oceania	180	155,676	139	145,248	603	611,805	1,135	1,143,251	1,770	1,748,083
Other Countries	105	96,904	272	213,319	204	217,889	533	495,251	1,716	1,494,498
Total cars	1,590	$1,438,528	1,759	$1,557,376	11,244	$11,565,034	18,406	$18,252,299	20,953	$21,301,858
Commercial†	40	85,997	48	91,054	11,244	11,565,034	‡175	‡349,700	778	1,351,140
Passenger†	1,550	1,352,531	1,711	1,466,322			‡4,371	‡4,187,064	20,175	19,950,718
Parts*	.....	282,287	.....	463,134	.....	2,423,259	.....	3,607,410	.....	4,448,792
Total cars and parts*	1,590	$1,720,815	1,759	$2,020,510	11,244	$13,988,293	18,406	$21,859,709	20,953	$25,750,650
Engines	517	110,068	52	9,836	‡547	‡65,097	6,833	834,203	7,809	1,336,317
Tires	.....	292,809	.....	321,815	.....	1,941,773	.....	2,533,635	.....	3,244,015
Total value all products	.....	$2,123,692	.....	$2,352,161	.....	$15,995,163	.....	$25,227,547	.....	$30,253,982

* Does not include engines and tires. † Not separately stated prior to July 1, 1913. ‡ Covers only last half of year.

IMPORTING OF AUTOMOBILES STILL INCLINES DOWNWARD

All Divisions Fail to Record Gains in Number of Cars Purchased in September — Total of Cars and Parts 47 per Cent. Less.

Importation of automobiles by the United States diminished still further during September last, the shipments of cars decreasing by 46, or 55 per cent., in number and $86,567, or 52 per cent., in value. Parts, also, showed a loss, dropping off by $3,150, or 13 per cent. The total of cars and parts shrank by $89,717, or 47 per cent.

Considering the five geographic divisions into which the world is divided by the import statisticians, but two increases of any description were made; the American purchases in the United Kingdom and in Other Countries were the same in number in both Septembers—1912 and 1913—but the value of the United Kingdom's sales to America gained by $6,414, or 47 per cent., and those of Other Countries by $1,465, or 107.

The heaviest loss was recorded by France, which decreased its American sales by 35 cars, or 73 per cent., and by $76,603, or 72 per cent. Italy's sales were eight cars, or 36 per cent. less and were less in value by $14,772, or 48 per cent. The figures in detail follow:

	September 1912 No.	September 1912 Values.	September 1913 No.	September 1913 Values.
France	48	$109,004	13	$32,401
Germany	5	11,515	2	8,444
Italy	22	30,363	14	15,591
United Kingdom	6	13,395	6	19,809
Other countries	2	1,369	2	2,834
Total cars	83	$165,646	37	$79,079
Parts (except tires)	..	24,255	..	21,105
Total cars and parts	83	$189,901	37	$100,184

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In the RETAIL WORLD

The Texas Motor Car & Supply Co., with salesrooms in Victoria, Cuero, Yoakum and Corpus Christi, Tex., has sold its business in the latter town to T. M. Barnhill, of Uvalde, and W. J. Woods, of Sabinal, both in the same State; the consideration was about $15,000. The Corpus Christi salesrooms and garage are located at 713-15 Mesquite street; the deal includes the Paige and Chalmers agencies. C. V. Reeves, who has been manager of the Corpus Christi branch, becomes manager of the Yoakum establishment.

The Chase Reo Sales Co. has been formed in Oakland, Cal., and will handle Reo sales in Alameda county; S. Hal Chase, who has been identified with the Reo interests in San Jose and who was secretary of the S. H. Chase Lumber Co., of the same town, heads the new concern. C. H. Hunter, who has been connected with the distribution of Kissels in Los Angeles, Wintons in Seattle, Reos in Des Moines and Ramblers in Chicago, is sales manager. The company has been located at 2838 Broadway.

The garage firm of Steffes & Thompson, of Chilton, Wis., has been dissolved; John Thompson has retired and will engage in the garage business elsewhere. Theodore Steffes, the other partner, has admitted his father, Anton Steffes, Sr., to partnership and they will continue the business as Steffes & Steffes. The company, which handles Overland and Jeffery cars, erected a new garage last spring.

The Utah-Idaho Auto Co. has been formed in Logan, Utah, with a capitalization of $25,000; the officers are: President, Morgan Knapp; vice-president, J. P. Griffin; secretary and treasurer, Wilford Johnson; additional directors, John Everton, of Preston, Ida., and W. H. Stewardt, of Logan. The company will deal in Maxwell cars.

In North Hackensack, N. J., a new brick and cement garage, 50 x 80 feet, has just been completed by Fred Rademann at a cost of $8,000. Under the title Johnson Avenue Garage it will be maintained as a service and repair-shop, carrying tires and oils; later a line of cars will be handled.

The Fond du Lac (Wis.) Auto & Repair Co. has been taken over by W. H. Collins and Harry Treleven; Collins formerly was sales manager for the Ford agency in Fond du Lac while Treleven managed the Auto Supply Co., on Forest avenue. The company stocks Ramblers and Buicks.

Harry B. Mummert, for several years engaged in the real estate trade in Dallas, Tex., has "gone into" automobiles; he has secured the agency for Marathon cars and is located at 216 West Rittenhouse street. salesrooms of the Tri-State Sales Co., at 1509 Commerce street.

Clarendon Davis, a banker and farmer in Huntsville, Ala., and D. C. Finney, of the same place, have been made Oakland distributers in Northern Alabama; they will maintain headquarters in Huntsville and Birmingham, with J. R. Hertzler in charge in the former town.

The Gas Power Engineering Co., of Milwaukee, Wis., has broken ground at North avenue and 2nd street for a two-story garage, repair-shop and electrical machine works, 50 x 150 feet; the company is now located at 917 3d street. The new building will cost $25,000.

Williams & Morford plan to enter the garage trade in New York City at 205-11 West End avenue; they have leased a building at this address from The White Co., of Cleveland, O., at an aggregate rental of $175,000. It contains 55,000 feet of floor space.

The Adams-Lancia Co., importer of Lancia cars, is about to remove from 235 West 58th street, New York City, to a new location on Broadway, the city's "automobile row"; space has been leased at the southwest corner of Broadway and West 57th street.

B. W. Price and J. A. Demerly have leased the Jamison Bros. Garage in Lafayette, Ind. They will reopen it after installing new equipment. Price has been a real estate man, while Demerly has been a repairman in Chicago for five years.

F. D. Palmer and L. E. Schwartz have entered the used car trade in New York City under the style Automobile Dealers' Outlet Co. They have located at 110 West 63d street. Both have been engaged in the used car business for some time.

The Conley-Judd Motor Co. has been formed in Green Bay, Wis., by L. E. Conley and Earl C. Judd; they have opened salesrooms for Maxwell cars in a building on Adams street formerly occupied by the United States Express Co.

The Fox River Valley Motor Car Co., of Green Bay, Wis., is equipping a new salesroom, garage and service station in the Hoberg building at 415-17 Main street; the company handles Fords. Charles W. Collier is manager.

Theodore Lochen has purchased a site in West Bend, Wis., and will erect a one-story garage, 45 x 80 feet; Lochen, who recently sold his hardware business in Newburg, in the same State, to Crass Bros., also will deal in Fords.

Louis Bleick, who has been connected with the Gorges Auto Co. in Appleton, Wis., has branched out for himself; he has opened a garage and salesrooms on Morrison street and is selling Mitchell and Detroiter cars.

The Lozier Sales Co., of Cleveland, O., has been reorganized as the Cuyahoga Sales Co. The personnel remains the same, and Ray M. Colwell continues as manager. The company handles Loziers and Chandlers.

J. J. Russell has entered the trade in Cedar Rapids, Ia., as a Studebaker dealer; he has taken space in the garage of the Courtney Motor Co., which recently discontinued its dealership in this line.

Ehresman & Rick, of Gridley, Ill., have sold their garage to B. F. Klopfenstein and John Diggle; possession will be given January 1. The former owners will remove with their families to Peoria.

Harold L. Detienne has formed the Wisconsin State Rubber Co. in Milwaukee with a capitalization of $10,000; the company will deal in tires, accessories and rubber goods.

T. J. Claer has taken over the business, stock and equipment of the Spencer (Ia.) Auto Co. He also has secured the repair business of L. H. Foster and will combine both.

Dillon Stallcup is about to enter the trade in Alliance, O. He has leased and will operate the Forestone & Mummertand Garage, at Oxford street and Arch avenue.

The Automobile Tire Co., of New York City, has opened a branch in Washington, D. C. It is located at 1026 14th street and is managed by H. Robert Clausius.

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PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Hugh Warner, one-time president of the Muncie Gear Works, of Muncie, Ind., has been appointed designing engineer of the Detroit Standard Gear Works.

A. C. Banker, one of the veterans of the automobile industry, has acquired an interest in the Cole Motor Co., of Boston, of which he will become the manager.

R. C. Hoffman has been appointed chief draftsman of the Haynes Automobile Co., of Kokomo, Ind. Previously he was identified with the J. I. Case T. M. Co., in Racine, Wis.

A. C. Foster has been appointed general manager of the No-Shammy Products Co., of Cleveland, manufacturer of the No-Shammy funnels. Previously he was sales manager of the E. H. Bryant (Lock) Co

E. M. Lubeck, who for the past three years was sales manager of the Studebaker wholesale branch in Chicago, has resigned that post and become attached to the sales staff of the Buick Motor Co.'s branch in the same city.

Harvey J. Woodard has resigned the post of sales manager of the Century Tire & Rubber Co., of New York. Woodard, who for many years prior to joining the Century staff, was identified with Diamond tires, has not yet indicated his future plans.

H. L. Goodwin has been appointed general sales manager of the Woods Motor Vehicle Co., of Chicago, to fill the vacancy created by the resignation of O. J. Woodard. Simultaneously, W. A. Simonson has been made sales manager of the company.

L. C. Flaherty, who for several years covered territory for the C. A. Shaler Co., has resigned that connection to become sales manager for the Adamson Mfg. Co., which produces vulcanizers, among other things. He, of course, will be located at the Adamson factory in East Palestine, O.

A. T. Smith has been promoted to the management of the Firestone tire branch in Los Angeles, which has been vacant since the tragic death of R. D. Barr in July last. Smith has been connected with the Firestone company for several years, latterly being attached to its Chicago branch.

W. A. McDermid, for the past two years sales and advertising manager of the Service Recorder Co., of Cleveland, maker of truck recorders, has resigned that connection to become identified with the newly organized Falcon Cyclecar Co., of the same city. He will have charge of its sales and advertising.

E. A. Williams, former president of the Castle Lamp Co., has been appointed assistant manager of the Willys-Gramm Motor Truck Co., of Lima, O. The Castle lamp, like the Gramm truck, is the possession of John N. Willys, the lamp company having been only recently removed from Battle Creek, Mich., to Toledo.

George H. Smith, until last week manager of the Peerless branch in Newark, N. J., has been promoted to the management of the Peerless marble palace in New York City, succeeding E. Irving. Concurrently, H. T. Birnie, one of the star New York salesmen, has been elevated to the post of assistant manager.

Harry L. Bill, former factory manager for the Disco Co., of Detroit, has assumed the same post in the Hayes Mfg. Co., of that city, and hereafter will have to do with metal bodies and other metal specialties. Bill has had wide experience, having been identified with the Corbin, Chalmers and Metzger companies, among others.

Charles P. Skinner, manager of the Mitchell branch in Philadelphia, which has been discontinued, has been transferred to the management of the Mitchell establishment in New York City. He succeeds J. M. Cram, who has returned to his home in Racine. Skinner's brother, George A., has also succeeded W. W. Burke as sales manager of the New York branch, which controls 11 Eastern States. Burke has not yet placed himself. Skinner handled the Mitchell car in New York until two years ago, when his business was taken over by the parent Mitchell-Lewis Co., which continued it as a branch, Skinner being given the Philadelphia berth.

Recent Losses by Fire.

Netcong, N. J.—Piper Garage; destroyed. Loss, $4,000.

Sheffield, Ia.—L. E. Dow; garage damaged. Loss not stated.

Lowell, Mass.—M. Chalifoux, 144 Cumberland road; garage destroyed. Loss not stated.

Davenport, Ia.—Schmidt Bros. Co., gasolene engine manufacturers; plant destroyed. Loss, $150,000.

St. Louis, Mo.—Theodore Kinstre, 6211 Plymouth avenue; garage and cars damaged. Loss, $2,000.

Parkersburg, W. Va.—Parkersburg Motor Car Co., Juliana street; garage destroyed. Loss not stated.

Indianapolis, Ind.—Central Transfer & Storage Co., Charles Roesner, proprietor; garage damaged. Loss, $13,000.

Covington, Ky.—Covington Automobile Co., John Hanauer, proprietor, 411 Madison avenue; garage and 12 cars destroyed. Loss, $25,000.

Minor Business Troubles.

The Milton G. Smith Garage & Auto Co., of South Bend, Wis., was sold at a receiver's sale last week; it brought $2,626.

H. H. Woodsmall & Co. has asked that a receiver be appointed for the Indianapolis (Ind.) Auto Clearing House; the plaintiff claims it is a debtor to the extent of $106.09.

A receiver for the Indianapolis (Ind.) Motor Car Co. has been asked for by the Wabash County Loan & Trust Co. The first named company operates a garage and is alleged to owe the bank $6,000.

The Dominant Motor Co., which conducted a garage and salesrooms in Albany, N. Y., at Northern boulevard and Washington avenue, has been placed in the hands of a trustee in bankruptcy; the latter has been instructed by the court to sell the property.

A receiver in bankruptcy has been appointed in the Federal court in Cincinnati for the Borland Mfg. Co., of that city, upon the petition of its vice-president and manager J. Archer Borland; a hearing upon the question of a dissolution will be held February 11, 1914. The company manufactured automobile wheels, and failure to secure sufficient working capital is said to have caused the embarrassment.

Charles A. Coey, who has been a figure in Chicago's automobile trade for 13 years, became involved in the bankruptcy court last week when a petition was filed against the C. A. Coey School of Motoring, which he operated at 1424-26 Michigan avenue; his liabilities are said to be between $6,000 and $7,000 and to exceed his assets by a small amount. The action, it is stated, was instituted because Coey was drawing on the company's funds without rendering an accounting.

Because the Latham-Phelps Co., Inc., could not come to an agreement with the Shawmut Tire Co. of New York, Inc., regarding the distribution of tires in Long Island, the tire company had a receiver appointed this week in the Supreme Court for New York county for the Latham-Phelps concern; the members of the latter are Charles H. Latham and Harry E. Phelps and they held a contract whereby they had the sole distribution of Shawmut tires in Long Island. When a dispute arose and relations neared the breaking point the Shawmut demanded an accounting of the business transacted by the Latham-Phelps. The receiver answers this purpose.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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SCANDAL-MONGERS OF THE TRADE.

When a tire is inflated too hard, it ceases to afford real comfort. If there is a weak spot in its structure, a blow-out usually occurs, or, at any rate, to obtain comfort it is necessary to press down the valve plunger and let some of the wind escape.

This rather homely simile best represents the condition of the automobile industry. For several years, it has been as plain as a pikestaff that it has been inflated to the danger point—that it was being overdone and over-exploited. To all except the super-cheerful, many of whom remained blind solely because they would not see, the gift of second sight was not required to foresee that sooner or later some of the wind must be permitted to escape in order to restore comfort and normal conditions. This is really all that has been happening during recent months. Creditors have been depressing plunger valves and, though the structure of the trade has been in no wise affected, the hiss of the escaping wind has caused so much noise as to affright not a few people.

This lessening of internal pressure is gradually relieving the structure of undue strain and is making for a restoration of natural and, therefore, healthier condition.

While it is regrettable that there should have been any strain to relieve, regrettable is too mild a word to apply to the manner in which of late unfounded suspicions have been cast on many good names. The reputation of no one in the industry has been safe from the loose tongues of the scandal-mongers. They have respected no one; they have dropped ugly suggestions in every direction. "I hear that Soandso is going to fail," "I hear that Soandso is going to quit making cars," "If Soandso fails, you won't be able to get cars," is the burden of their talk which, unfortunately, is reechoed by the hills. There is some evidence, and even more reason to believe, that too many of these scandal-mongers of the trade wear the garb of traveling salesmen, who in their efforts to "make an opening" and get orders do not scruple to magnify or, if need be, to question credits and create suspicions the better to serve their purposes.

Apparently some of them do not wholly realize the enormity of their offense; in others, it appears to be studied and devilish cunning. But whatever it may be, it is too general to remain unchecked. It is so highly dishonorable, so injuriously far-reaching, that there is no manufacturer of cars or parts or accessories who should not caution or, if need be, issue printed instructions sternly forbidding his salesmen and his dealers to make use of such poison—for it is poison and to a greater or less degree its effects are felt by all who have to do with the industry. In the absence of such letters, it may be well for all concerned to bear in mind that at least one dealer in the West has been made the defendant in a suit for $10,000 for uttering poisonous statements of the sort. In some States the circulation of stories affecting credits is a jailable offense—a fact which also should serve to give pause to the scandal-mongers.

SOUNDING WAR CRY OF THE CYCLECAR.

If cyclecars are conspicuous by their fewness, indications point to no lack of publications devoted to their interests. There are signs that the seed is germinating in some unsuspected places, and already there is evidence that publishers who have done indifferently well in other fields see in the cyclecar a peg on which to hang renewed hope and are sounding the war cry in their pages with more or less "patriotic" enthusiasm. If the rush continues, the output of cyclecar journals is not unlikely to exceed the output of the little vehicles themselves.

Abroad, where unrutted roads are the general rule and where narrow gauge cyclecars, therefore, have more chance of success, they have had one or more cyclecar journals for these many months, but, remarkable to relate, one of the oldest of them has just seen a large, white light and changed its title from "Cycle Car" to "Light Car," a fact which should not be without bulging significance even in this "land of the free."

As for the cyclecar situation on these shores, was it ever more deliciously, if unconsciously, described than by a Chicago newspaper, which, only last week, blithely remarked that the manager of a particular cyclecar project "is taking orders so rapidly that his company soon will have to decide upon a site for its new factory to make good on deliveries"?

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30 ELECTRICS STAGED IN BOSTON'S BALLROOM SHOW

Makers and Dealers Display Nine Brands of Electric Vehicles in First Exhibition of the Kind—Some of the Beauteous Exhibits.

Boston's first electric vehicle salon, which is also the first exhibition of electric vehicles exclusively to be held anywhere, was opened with due formalities on Monday evening, 17th inst., and it proved all that its promoters, the Electric Motor Car Club, hoped for it and perhaps a little bit more. All told, 30-odd pleasure vehicles were disposed about the grand ballroom of the Copley-Plaza Hotel in the Back Bay section of the city, and, needless to point out, every one of them represented the latest effort of its respective maker. Nine dealers and manufacturers were responsible for the car exhibit and several battery makers "helped out," so to speak. The exhibition was formally closed last (Wednesday) night. The list of car exhibitors was as follows:

J. W. Bowman Co., Waverley; Peerless Motor Car Co., Rauch & Lang; S. R. Bailey Co., Bailey; W. L. Russell Co., Buffalo; Whitten-Gilmore Co., Woods; F. N. Phelps, Baker; Anderson Electric Car Co., Detroit; D. C. Tiffany, Ohio; W. H. Stevens, Standard.

For the most part the exhibition was made up of closed cars as being particularly seasonable for the time of year; here and there, however, there were two or three examples of open runabout bodies, and it goes without saying that the Bailey company exhibited its new four-passenger touring car which made its debut at the New York Electrical Show. Another car at the Bailey space which drew considerable attention was the roadster which S. R. Bailey recently drove all the way from Boston to Chicago.

Waverley products were represented by a leather-trimmed victoria, a limousine four, a roadster and a brougham; the Rauch & Lang space held what is termed a demi-brougham, a roadster, a town car and a full-sized brougham. Three Buffalos—roadster, coupe and brougham—were flanked by Woods cars in four- and five-passenger capacity.

Among the more conspicuous vehicles there was a Baker that drew more than one sigh from the far sex. It mounted a special type of five-passenger coupe body upholstered in silk and satin and decorated by no less a person than Paul Poiret, who is generally credited with the responsibility for the so-called minaret gown. Another Baker done all in cream velvet velour drew almost as much admiration, especially from those who are familiar with the fabrics used.

The list of battery makers included the Edison Storage Battery Co., the Philadelphia Storage Battery Co., the Electric Storage Battery Co., and the American Storage Battery Co., their products being, respectively, Edison, Philadelphia, Exide and Harvard.



*Indicates Sanction by A. A. A.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Dec. 3-4-5, New York City—Motor Dealers' Contest Association's 500-mile reliability contest.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan. 17-24, Pittsburgh, Pa.—Automobile Dealers' Association's annual show.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 7-12, Seattle, Wash.—Annual show in State Armory.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 22-March 1, Hartford, Conn.—Automobile Dealers' Association's show in Park Casino.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Association's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

Case Founder Dies at Ripe Old Age.

Stephen Bull, known as the "grand old man" of Racine, Wis., and the last survivor of the four founders of the enormous J. I. Case T. M. Co., of that city, died at his home there on Saturday last, 15th inst., after a short illness.

Death was due simply to the inevitable infirmities of old age, Mr. Bull having celebrated his 91st birthday on March 14th last. He had been blind for 10 years. J. I. Case was his brother-in-law. The business bearing Case's name was established in 1857. As a mark of respect, the entire Case manufacturing establishment remained still during the time of the funeral services, which were held on Tuesday.

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RAILROADS GIVEN DECISION IN THE OREGON RATE CASE

Interstate Commission Rules Against Dealers in Long-Pending Dispute—Arguments Brought to Bear by the Railroads.

In dismissing the complaints and handing down an opinion in the cases of H. L. Keats Auto Co. v. Oregon-Washington Railroad & Navigation Co. et al., and the Menzies Du Bois Auto Co. against the same carriers, the Interstate Commerce Commission last week declared that the present less-than-carload ratings on automobiles from New York and Syracuse to Portland, Ore., is not unreasonable.

The shipments in each instance, consisted of two automobiles, not crated, on which a rate of $7 per 100 pounds was charged. Complainants averred that a rate not to exceed $4.50 should have been charged, and reparation was asked on that basis. At the time the shipments moved—August and September, 1909—there was in effect a carload commodity rating on automobiles of $3 per 100 pounds, with a carload minimum of 12,000 pounds. It was insisted that the difference between the CL and LCL ratings was too great.

How the railroad companies view automobile shipments was disclosed by their stand in those two cases. In justification of the rate charged, they cited the fact that automobiles in less than carloads, not boxed or crated, are rated double first class in both the Western and Southern Classifications, and at two and one-half times first class in Official Classification. The first class rate of $3 which was in effect at the time the shipments moved has since been increased to $3.70. This first class rate, it is contended by the carriers, is water-compelled rate, and is less than it would be were it not for that fact. Automobiles do not move by water, hence there was not that element to be considered.

It was asserted also that there are perhaps few articles of freight more subject to injury and unsatisfactory to handle than uncrated automobiles; when shipped in less-than-carload quantities, they must be handled with the greatest of care to prevent injury from other freight, while a comparatively small injury to an average automobile will generally result in damages equal to or in excess of the revenue received for its transportation. As evidence it was pointed out that during the year 1911 the Oregon-Washington Railroad & Navigation Co. alone paid $5,022.34 loss and damage claims on automobiles which it transported during that year, and in which the total revenue received by all the carriers involved in the transportation movement of those automobiles only amount to $23,412.63.

Since the date of the hearing the carriers have increased the carload rating between New York and Syracuse to Portland from $3.00 to $3.30, have eliminated the less-than-carload commodity rate of $7, thus putting the LCL shipments in at double first class under Western Classification, or at a rate of $7.40, an increase of 40 cents over the rate complained of. The tariff carrying the increase was suspended and investigated by the commission, and afterwards allowed to become effective.

Stratton Buys Jeffery New York Branch.

In pursuance of its policy of discontinuing its branches, the Thomas B. Jeffery Co., of Kenosha, Wis., has disposed of its New York establishment to F. E. Walbridge and Gilbert M. Stratton, who, trading as the Stratton Motor Car Co., hereafter will handle the Rambler, or Jeffery, car on a dealership basis. Walbridge and Stratton at present constitute the Pope Motor Car Co., which handles the Pope-Hartford car in New York and which will be succeeded by the Stratton company. Pope-Hartfords, however, will continue to be sold, but whether the Stratton company will occupy the Jeffery branch or remain in the present Pope-Hartford quarters, both of which are on Broadway within three blocks of each other, has not yet been settled.

White to Try Body Suit Once More.

A judgment of $1,567.62, which George B. Marx, of New York City, secured in March against The White Co. in the New York City Court, is not to stand, the Appellate Term of the Supreme Court for New York county this week having ordered the case retried. Marx claimed the amount named was due him for labor and services rendered in connection with placing 20 bodies on as many White chasses. He claims he was entitled to a total of $7,647.15 and received but $6,259.34. The White Co. entered a counterclaim of $185.

Tanner Gauge Becomes Tanner-Hower.

The Tanner Gauge Co., of Akron, O., which for several years has manufactured gasolene gauges, has been reorganized and reincorporated with an authorized capital of $50,000 as the Tanner-Hower Mfg. Co. Its officers are M. Otis Hower, president; Perry E. Tanner, vice-president and general manager; W. T. Helfer, secretary and sales manager; A. W. Tanner, treasurer. It is the intention of the new company to branch out into the manufacture of other goods. The new president is also the head of the Akron Sales Co.

DEFRAUDING CREDITORS IS CHARGE AGAINST SUPPLYMEN

Kansas City Firm's Members in Uncle Sam's Grasp — State's Evidence Reveals Inside of Alleged Bankruptcy Swindle.

One way of "trimming your creditors" was described last week in the Federal court in Kansas City, where Harry D. Todd, former president, and Leonard Ulmann, former attorney of the Auto Specialty Co., of that city, are on trial on a charge of conspiracy; until the summer of 1912 the company was located at 1516 Grand avenue, but when it got into deep water it is charged that a conspiracy to defraud the creditors was launched.

The man who undertook to disclose the internal operations of the concern was John T. Fenn, who formerly was sales manager for the company and who also is a defendant.

"They led me into a trap," he said in giving testimony. "Every dollar I had in the world was in the business, and as I am more than fifty years old and have a wife, I could only watch their fraudulent statements and overtures for settlement with their creditors. I couldn't protest; I was dragged into it.

"Todd told me he had hidden tires, horns, spark plugs and platinum points in the store in trunks, on the roof, in the attic and in the cellar a few days before the receivers were appointed," Fenn said in answer to the questions of the assistant district attorney. "We were to retrieve the goods after a settlement had been made and put them back on sale."

When Albert J. Martin, United States marshal, made an inventory of the company's stock he found thousands of dollars' worth of goods hidden as Fenn testified.

"Todd destroyed all the checks, deposit slips and inventories made while I was with the company about July 1," the witness continued. "On January 1 of 1912 an inventory showed we had a stock of about $28,000. This was raised to $41,000 to make a showing for a commercial rating. On March 1 we owed $3,000. Then the company began buying stock so heavily that on July 1 it owed about $55,000. A statement had been prepared April 1, saying that the assets exceeded the liabilities of the company by $43,700. That was wrong; the company was behind all that year."

The assistant district attorney read a letter which Fenn said Ulmann had sent to all of the company's creditors offering to pay them thirty cents on the dollar, rather than go through a receivership.

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PLAYING SQUARE IN SELLING

Salesman Who Lost Out by "Double Crossing" His Customers—And the Salesman Who Built Confidence and Got the Orders.

The salesman for a well known accessory jobber had been making a certain town in his territory for years. There were six automobile dealers there and every one of them sold accessories, and every one of them did business with a competing jobber. Through frequent calling the salesman was acquainted personally with each dealer, but never had he taken a single order. It seemed to him as if he would never get any business there. Nothing he could say appeared to interest the trade.

Then he Got All the Orders.

Then one fine morning when he was calling on the biggest dealer first, according to his custom, something happened. He got an order—and it was a good one. The next dealer he called on also gave him a fair order, and before the day was over he had orders from all six. For a moment, when he got back to the hotel that night, he felt as if he were dreaming; but the signed orders proved the reality of the situation. He was extremely curious to find out what had brought about this change of heart. Later he broached the subject to the leading dealer. "I have called on you and every other dealer in this town for three years but never got an order till a month ago," he said. "Then I not only got your business but that of every other dealer here. Can you give me a key to the situation?"

"Well," said the dealer, "we all work together here. We have a little organization among ourselves by means of which we help ourselves. Things pertaining to the practical side of our business are discussed freely and we stand by one another. Until your last visit all our business had gone to a competitor of yours; but we secured positive information that he was not only selling us goods but had a man up here selling goods to our customers at prices it is impossible for us to meet. That was not square and we decided to do business with someone else. You were given the business because we all knew you and because during the time you have called here you have never been known to 'knock' any of your competitors. You have paid attention to your own goods and your own house and for that reason you stand out from all of the other jobbers' representatives who call on us. Your prices are no lower than the others, but your methods are square . . . and you will get our trade so long as they continue to be square."

"That was a year ago," said the salesman in concluding his story of the incident. "I make that town every thirty days and never yet have I failed to get an order from each of those six dealers every time I called. That town is one of the most profitable in my entire territory."

The secret of the situation was that the salesman was building confidence in himself and his house all the time, though he didn't know it. At the proper time after that confidence was established he secured the business—and the methods that inspired that confidence are keeping the business. "You cannot cast the shadow unless you have the substance," says a well-known writer, and proof of this comes in the work of every good salesman.

APPEAL TO ELECTRIC OWNERS THAT EARNED BIG GOOD-WILL

Realizing the value of the public's good-will, the Anderson Electric Car Co., which handles Detroit electrics in Kansas City, recently took advantage of a public resentment against an obnoxious city ordinance and allied itself with the owners of electric cars. The ordinance provided that no car should be left standing in any one place for longer than one hour, which regulation was particularly disliked by those who attend the theater in their electrics.

The dealer ran an ad. which said, "No More Police Tea Parties," and it drew many responses, coming just at a time when several prominent citizens—women included—had been haled into court for violating the new rule. The Anderson company offered to take care of electrics without charge for any reasonable length of time and arranged to take cars from and return them to the theaters for the owners. Attendants are stationed at the theaters and leading stores for the purpose of making good on this unusual service offer.

MAKING A HORN MOTOR SERVE MORE THAN ONE PURPOSE

The Acme Tire Repair Co., 226 Jefferson avenue, Detroit, had a novel window display a few days ago that attracted more than ordinary attention. It consisted of a regular artillery wheel studded with colored electric lights and kept revolving by means of the small motor in a Newtone electric horn that was connected with a Witherbee storage battery.

This moving display served to rivet attention on a window full of horns and, incidentally, demonstrated the power of the Newtone motor. A legibly printed card invited the public to come inside and get a demonstration of Newtone efficiency.

Making Use of Printed Matter.

When the manufacturer ships you a supply of printed matter, what do you do with it? Booklets in boxes in the storeroom might better be back in the factory. They have been sent you for a purpose. That purpose is to have you place them in the hands of your local prospects. Are you doing it systematically? Are you doing the way you would like to have it done if you were paying the bills?

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AWAKE-N-DISING WORLD

HURRY-UP JOB A BOOMERANG

Work, Rushed to Please Customer, Caused Enduring Trouble for Repairman—

Wisdom of Being Sure Each Job Is "Finished."

Finish it up.

Don't let a job get out of your repair-shop till you know it is finished.

Don't let the impatience of the owner cause you to break this rule. Your reputation is the one that suffers. If there are any shortcomings on the work the owner is likely to forget that he hurried you.

It's far better to keep him waiting and deliver the job right.

Rush Job Came Back Three Times.

A few days ago a certain motorist went into a repair-shop and left his car. His brakes were "frozen." He wanted them fixed. When could he get the job? Oh, in about half an hour. He came back in two hours. The job was not done for the very good reason that what seemed like a very simple situation had on examination proved to be a serious case of bent rear axle. Several new parts were necessary.

It would take at least a day longer.

At the end of the promised time the man came after his car. It was just done. He got it and drove off in it. Next morning he was back. Brakes were dragging. "Is that so? We'll fix that in a short time," said the repairman. The car was delivered to the customer in 45 minutes. And next day the man was back again. Brakes still dragging.

Work had to be done over three times. Why? Just because it had never been thoroughly inspected and tested. Why? Because the customer was in a hurry and the proprietor had too great a desire to please. And whom did it hurt? It hurt the customer some because he was obliged to come back three times. He thought less of the garage than he had ever thought before. It hurt the garage. It hurt its pocketbook and it hurt its reputation..

WEATHER REPORTS AS GUIDES FOR SALE OF CERTAIN GOODS

Watch the almanac. Watch the weather reports. It is good business. It will tell you what goods to push on the day that is to come. The accessory jobber who has a large number of customers can post them in advance what to stock of those things particularly adapted for bad weather.

Is it going to freeze? The weather man can usually give the right answer within 24 hours. Have your window display all planned. If you have local customers it gives you a chance to call them up and pull in several orders for the seasonable stuff.

Do you keep a garage? Why not make money by selling anti-freezing solutions. It may be alcohol; it may be something else that you recommend. Go at it in earnest and make some money out of it. Don't wait for your customers to come in; call them up by 'phone. Tell them cold weather is on the way. Suggest that they drive in in the morning or whenever it is convenient and have their radiators filled up. Don't let them stumble upon the need when they are far away from you and have to buy elsewhere. Show that you are on to your job and are really out to sell stuff. You will make the sales and the money. Volume is what counts. You can have it by following out some such method. Try it.

REACHING INTO OTHER TRADES FOR HELPFUL SUGGESTIONS

If you are an automobile dealer the object of your business is to sell cars. Leaving aside all ethical considerations, it would seem that, if you are handling the right car—a car which you can stand back of—the larger the volume of your sales the more profitable would be your business.

"Of course!" you say, and add: "What's the man driving at?" It seems so simple no one would dispute it. Nevertheless, if one judges many dealers by their actions it would seem as if the matter were the one farthest from their thoughts. For only a few automobile dealers are reaching into other businesses to see what they can obtain in the way of ideas and suggestion that will be profitable.

What can the automobile dealer learn from the hardware man? The adding machine salesman? The typewriter salesman? The drygoods store? The department store? Surely there must be some lesson in good merchandising that will help the dealer who discovers it sell more automobiles.

Examine each and every department of their business and its presentation to the public by printed word, by catalog, by living sales people, by window displays, by countless other methods—old as the hills, perhaps, but still just as effective as ever.

USING TAGS TO FURTHER THE SALE OF ELECTRIC STARTERS

All sorts of devices have been advertised by attaching cards to steering wheels of cars left standing at the curb, but it remained for F. Jos. Lamb, 940 Jefferson avenue, Detroit, to advertise electric starters by attaching his advertisement to the crank itself. Lamb uses a heavy yellow tag six and a quarter inches long by three and one-quarter inches wide. His entire proposition is brief, pointed and complete. His tag says: "I will attach an electric starter in place of this crank for $150"; then follows his name and address. The message is in plain, large, black-face type and reads the same on both sides. The idea is simple and effective. Lamb has sold a considerable number of starters through the plan, which is capable of much elaboration, if elaboration is desired.

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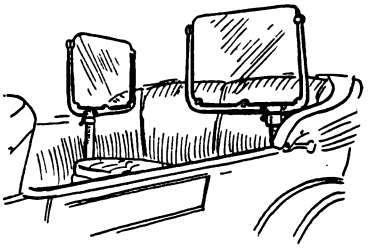
RECENT DEVELOPMENTS in ACCESSORIES

Here's the Individual Windshield.

The windshield has gone a long way toward making the automobile more comfortable than it used to be, and so thoroughly is this appreciated that a car without a windshield somehow has a rather bare look. But the ordinary windshield confers most of its benefits on the occupants of the front seat—which, as everyone knows, is the most comfortable place to ride in anyway.

To put the occupants of the rear seats on an equal footing with the driver and his seat-mate several types of tonneau windshields have been brought out. Most of the devices are attached to the back of the front seat, in which they differ radically from the Clark tonneau windshield, manufactured by A. N. Clark & Son, of Plainville, Conn., and shown so clearly in the accompanying illustration that the advantages are readily perceived.

In reality the Clark windshield, in its complete form, is two windshields, one for each side of the rear seat. Not only is the device a comfort when there is a head wind, but in case of a side wind it can be swung around to afford the desired protection and, of course, can be placed at any intermediate angle. The glass is removably set in an aluminum frame which is carried in a fitting screwed to the seat under the cushions. It is adjustable for height. If it is not needed it can be unshipped and packed into a leather case. The only tool needed to make the attachment is a screwdriver.

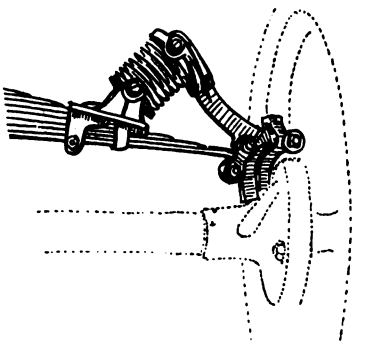


CLARK INDIVIDUAL SHIELDS

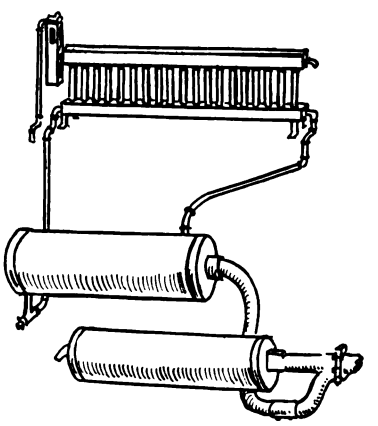
Shock Absorber that is Unusual.

The enormous number of Ford cars in use and constantly pouring out of the factories makes the Ford field a particularly attractive one for manufacturers of accessories, because there are so many possible purchasers. Hence there is a long and rapidly lengthening category of devices ,each designed to improve the operation of the car in some detail. Perhaps the latest of these devices—one of the latest, anyway—is the Hassler shock absorber, which is made by Robert H. Hassler, of West 10th and Canal streets, Indianapolis, Ind., and which is illustrated herewith.

The construction of the Hassler shock absorber is so easily understood from the picture that a detailed description is quite unnecessary. It may be mentioned, however, that the springs, which are of flat steel, have an aggregate length of no less than 36 feet, there being 9 feet of steel in each of the four coils. The springs work under compression at all times, and their durability is ensured by the fact that they work over a range of about one-third their capacity. Rebound is checked by the auxiliary springs because when the leaf spring of the car rises above a certain point the main lever of the shock absorber is held stationary and the coil springs again are compressed, so that both upward and downward movements compress the coil.



HASSLER SHOCK ABSORBER



ROBINSON WATER HEATER

The Hassler shock absorber is said to be so sensitive that when the car is unoccupied pressure of the hand on the body will move it on the coils; yet the springs cannot "bottom." A set consists of four, two for each leaf spring of the car. The Ford spring perches are used for attachment, simply being reversed, on the front axle; on the rear they are bolted to the brake housings in place of the spring perches.

Heating the Car with Hot Water.

Heating by hot water has certain advantages of its own that are undeniable. Water cannot get more than just so hot, and at the hottest cannot burn anything. It affords a mild, steady heating effect that is particularly agreeable, and it cannot become so hot as to be unpleasant. For these reasons, apart from other considerations, there should be merit in the Robinson auto heater, which is the product of the Robinson Auto Heater Co., of Milwaukee, Wis.

The principle of the Robinson heater is simple, and so is the construction, as the accompanying illustration shows plainly enough. The heat is extracted from the exhaust gases, which are diverted from their usual path and made to flow through a cylindrical chamber containing a water heater connected, through pipes at either end, to a radiator which is installed wherever it is desired to have the heat—which means inside the car. Circulation is maintained by gravity—that is, the water rises into the radiator when heated and falls, through the cold-water pipe, back to the heater when its heat has been given off.

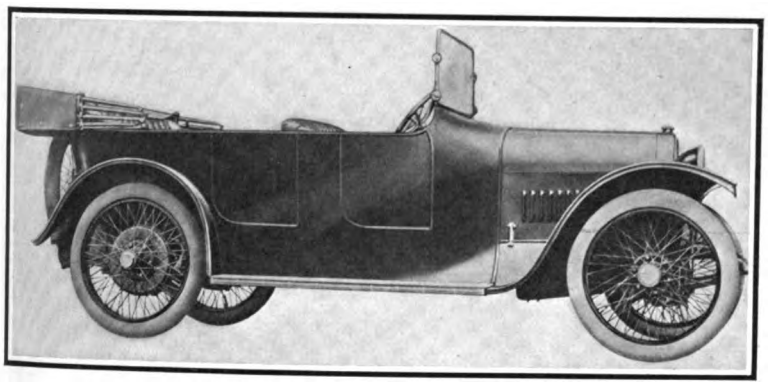
The heat is controlled by means of a valve which acts on the exhaust, directing the gases through the heater in sufficient volume to produce the desired warmth. Any amount of gas, from the full volume sent out by the engine to none at all, can be turned into the heater, which, incidentally, is also a muffler and acts as such when the gases pass through it. There is an expansion chamber on the radiator to take care of any increase in the volume of water due to heat, an overflow pipe running down through the car floor. The radiator can be installed in any desired part of the car, and even two radiators can be put in. If there is not sufficient room under the car for two mufflers, there is a combination device to take the place of the car muffler.

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MOLINE LOWEST PRICED CAR FITTED WITH KNIGHT MOTOR

Four-Cylinder Motor Block-Cast with Gravity Cooling System—Clean Design a Notable Feature—Clever Body Construction.

Of course, it was no secret that the Moline Automobile Co., of East Moline, Ill., was preparing for the market a Knight-engined car; but since the statement of the simple fact, made in Motor World of August 28, but little has become known regarding the details of the expected model. The announcement of the company that it had entered the lists with other Knights was a surprise, and it has kept the details "up its sleeve," or up the sleeves of its motor, perhaps, for the purpose of holding



MOLINE-KNIGHT FIVE-PASSENGER MODEL WHICH SELLS FOR $2,400

another little surprise party at the right time. The right time having arrived, it transpires that the Moline-Knight car differs in a number of important respects from other Knight cars, though the peculiarities are confined to the motor, the rest of the chassis following established Moline lines closely and adhering to standard engineering practice.

Not the least of the unusual features of the Moline-Knight is its price, $2,400, which is lower than that of any other Knight-engined machine on the market, and includes a full equipment list, headed by a dual-unit electric starting and lighting system. Mechanical innovations in the motor consist in casting the four cylinders in a single block and cooling by thermo-siphonic action—practices that are not followed in other American motors of this type. As for the outline specifications of the car, it is a touring car with seating capacity for five, but with provision for two extra seats if it is desired to carry seven; the motor and gearset—three-speed selective—are mounted as a unit on a three-point suspension; wheels are 38 inches in diameter with 4½-inch tires and the wheelbase is 128 inches; and the steering wheel is on the left side with the usual corollary of center control. The clutch is a leather-faced cone.

The exterior of the motor presents an appearance of cleanness that is notable even in this day of clean-designed motors. Perhaps the chief factor in bringing about unusual cleanness is the casting of both intake and exhaust manifolds integral with the cylinders and water jacketing; the manifolds, incidentally, are entirely surrounded by water, so that one is cooled and the other warmed, the water being cooler than the exhaust gases and warmer than the incoming vapor.

The cylinder heads are separate parts and are held down by nuts which are of bronze because they are within the water space. The water space is closed at the top by a bolted-on cover with which is cast the upper water manifold. The spark plugs set into little wells such as are familiar in Knight engines. The water jackets thus cool the cylinder heads and the sliding sleeves, the only portions of the sleeves not jacketed being the extreme lower ends, which do not need cooling. Special means are adopted for securing even distribution of the cooling water; there are two pipes leading from the radiator to the lower water intakes, one at each end of the motor, so that the cooling effect of the incoming water is not concentrated, and the dangers of unequal cooling and the development of hot spots are eliminated. The cylinder heads are hemispherical inside and the piston heads are cupped, so that the combustion chambers are almost spherical—a form that is theoreticaly correct for high efficiency.

The all-important sleeves are reciprocated by the usual arrangement of eccentrics and connecting rods, the eccentrics being 2 5/16 inches in diameter and the eccentric pins 1⅛ x 1¼ inches, so that there is ample wearing surface. Drive from the crankshaft to the eccentrtic shaft is by "silent" chain. The magneto and the electric lighting generator also are driven from the valve chain, both being mounted on the left side of the motor, as the illustration shows, and both on the same bracket casting. This bracket is mounted on a pivot upon which it can be swiveled; thus the driving chain can be adjusted for wear by a slight turning of the bracket on its support, and one of the common objections to the use of the "silent" type of chain is eliminated. The sprocket over which the chain runs is on the magneto, from the shaft of which another chain, smaller of course, drives to the generator. Adjustment is conveniently made by means of a screw on the chain housing.

The lubrication system has been worked out with a completeness that would seem to afford adequate provision for the needs of the motor. There is the usual oil reservoir in the bottom of the crankcase, from which oil is taken by a gear pump and forced to the various bearings at a pressure which varies with the speed, the maximum being about 20 pounds to the square inch. The idea is to "float" the bearings on oil films. The oil is forced through drilled passages and registering holes, first to the main bearings of the crankshaft, then to the connecting-rod big-end bearings and finally to the piston pins through the connecting rods, which are tubular, having ⅞-inch holes filled with oil throughout their length. The piston pin is hollow and moves in the piston, in which it is retained by the lower edge of the lowest of the three piston rings. A special oil lead carries lubricant to the eccentric shaft chain, and part of this goes to the small shaft bearings.

Regulation of the lubrication is automatically effected by means of a by-pass connected to the throttle lever; when the motor is running slowly nearly all the oil is by-passed back to the reservoir, while when the throttle is wide open the oil is all pumped to the bearings at its maximum pressure of 20 pounds. As might be expected from the block-casting of the cylinders, the crankshaft runs in three bearings, which are 2 inches in diameter; the front and middle bearings each are 2½ inches long and the rear bearing, which has the weight of the flywheel to carry, is 4 inches long.

The Moline people guarantee that their motor will develop 50 horsepower on the brake, and that they are perfectly safe in so doing would appear from the statement that on dynamometer test the horsepower ran up to 65 at 1,800 revolutions per minute, and then the capacity of the dynamometer was reached, making further measurement impossible. As it is said that the power curve showed no indication of beginning to fall off at that point, however, it would seem that even greater power may be developed by further increasing the

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speed. The port areas are, of course, important factors in the large power output obtainable; the ports in the sleeves are 3⅞ inches long, the intake port ½ inch wide and the exhaust port ⅝ inch wide, giving opening areas double the areas of the Moline poppet valve motor, though its cylinder dimensions are a trifle greater than those of the sleeve valve motor.

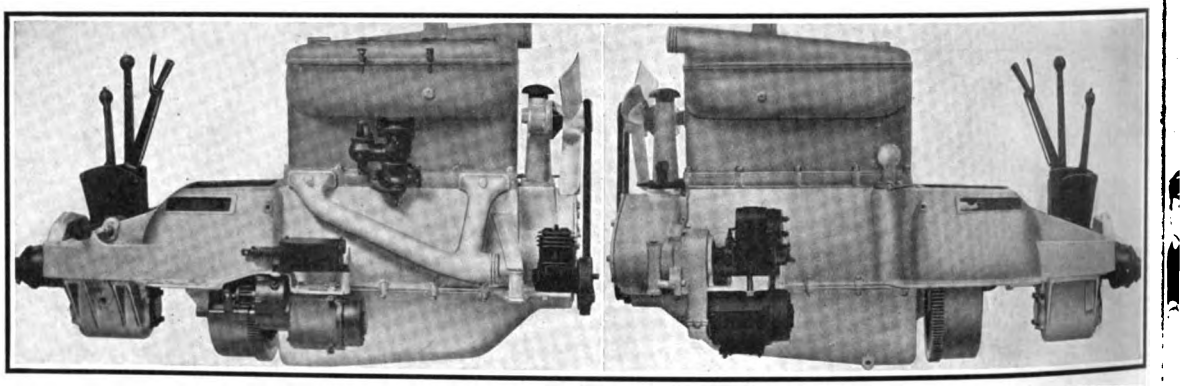
The extremely quiet running of the motor was emphasized when it came to equipping it with an electric starting system. Naturally it was desired to keep down what might be termed auxiliary noises as well as motor noises, and it was discovered that the slight squeaking of the starting motor brushes was distinctly audible when getting under way. So the commutator and brush design was slightly changed to eliminate this ordinarily inaudible sound. The starting motor is bracketed low down on the engine and drives through a pinion meshing with a steel gear ring on the flywheel. A lever located beside the gear-shifting lever operates the starting motor switch and at the same time throws the motor pinion into mesh with the flywheel gear. The motor takes a current of 220 amperes at 12 volts from the battery at the instant of starting, but this drops to 75 amperes as soon as the flywheel begins to roll. The motor will turn the engine over at the rate of 120 revolutions per minute. Though the starting motor takes 12 volts, the lighting system is wired for 6 volts. The battery is an LBA rated at 80 ampere hours and is placed under the front seat of the car.

The fan standard, carrying the cooling fan, which is driven by belt from a pulley on the crankshaft, is also the breather and the oil filler, being hollow, of course. Part of the equipment of the motor is a two-cylinder air pump for tire inflation, driven by gears from the crankshaft, an intermediate gear swinging on a pivot providing the means for engaging the pump. The operating lever is at the front of the car under the radiator; the pump gears do not run unless the pump is in actual operation.

As already has been intimated, the chassis is a typically Moline design apart from the new motor. Changes have been made, however, by substituting semi-elliptic rear springs for the full-elliptic springs that the Moline people formerly employed, and underslinging them. A full-floating rear axle still is used, driving the wheels, which run on double annular ball bearings, through eight studs. The pressed steel frame has a rear kick-up sufficient to permit lowering the body four inches, to the enhancement of the general appearance of the car.

Stream-line curves, unbroken from end to end of the car, characterize the body, which is designed along European lines. The lines are not broken at the junction of the hood and the skuttle because of the slope of the hood, which carries forward the skuttle line. The body is high-sided, so that the backs of the seats project only slightly. Though the body is lighter than in previous Moline models, it is considerably stronger and stiffer by virtue of a skeleton truss framing system in lieu of the usual solid sills. The car is of clean appearance, having clean running boards and no side lamps. The headlights are provided with dimmers for city service. The fenders are crowned and are without the usual rivets.

In addition to the starting and lighting system and the air pump, the equipment of the car consists of a top of the "one man" type, with cover and curtains, windshield, electric horn, Warner speedometer, Truffault-Hartford shock absorbers, gasolene and oil gauges on the dash, eight-day clock and the usual rails, tools, tire repair kit, and so on. Wire wheels will be supplied at an extra cost of $75.



RIGHT AND LEFT SIDES OF MOLINE-KNIGHT MOTOR SHOWING BLOCK CASTING AND INTEGRAL MANIFOLDS

Spooner Plans "Helping Hand" Society.

Stealing time from the exploitation of cyclecars, the irrepressible F. Ed Spooner, of Chicago, New York and elsewhere but now of Detroit, is endeavoring to organize a "benevolent society of veterans of the automobile industry" and expects to hold a meeting for the purpose in Detroit during next month. The purpose of the organization, if formed, will be to "keep track of old-timers and also to look after the interests of their families in time of need." To employ Spooner's words, "Many men have given the best years of their life to the propagation of the motoring business without laying by money for rainy days, as is ever the case, and many will feel much easier when they know that temporarily, at least, they and theirs will be looked after."

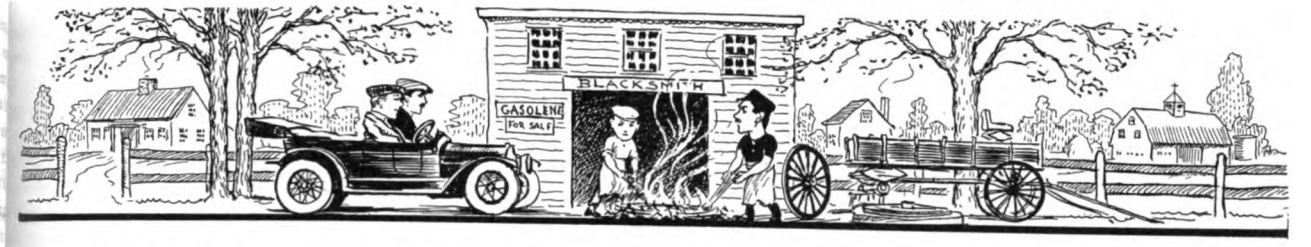
American Starter for German Emperor.

Whatever may be the attitude of the German automobile manufacturers toward electric lighting and starting systems, Kaiser Wilhelm himself evidently has no doubts of their utility and convenience. At any rate, two 60-horsepower Knight-engined Mercedes which he has ordered from the Daimler company will be equipped with made-in-America Bijur electric lighters and starters, the current being supplied by an American storage battery, the Willard. This electrical equipment, it is stated, was shipped from the Bijur plant in Hoboken, N. J., and was installed at the Bijur plant in Germany.

Why Socket Wrenches Must Fit Properly.

While it is necessary to use care in working with an ordinary wrench to see that the wrench fits the nut properly in order to avoid the deterioration of the wrench or the nut, or both, it is even more important in the case of some of the very thin-walled socket or box wrenches on the market. These are very useful where there is little space around the nut; but if the wrench is considerably larger than the nut it is likely to be forced out of shape if any amount of pressure is applied, and the deformation, once started, will progress rapidly.

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PROMOTING TEAM WORK BETWEEN DEPARTMENTS

Lack of Cooperation in Organizations a Business Ill Which Reilly Deems Worthy of Efficient Doctoring—Repair Foreman's Half-hearted Help to Sales Department and the Harm It Did.

"Can we get a little 'gas'?"

The sign on the front of the country blacksmith shop said Reilly could get "gas" but the question was a natural way to open negotiations.

The smith with one heavy-soled shoe kicked the embers up about a two-inch wagon tire which was baking in front of



"COME ON, JIMMY! DON'T POUR WATER ON THAT WHEEL ALL DAY!"

the shop under a circular bonfire of old fence boards.

"I can't git it myself for a few minutes; we've got to drop this tire on. George!" he shouted in the direction of an upstairs window, "Can yuh come down and draw a little "gas'?"

Smith's Painter Wouldn't Draw "Gas."

The answer was as prompt as the echo of a thunder clap. "No, darn it! I gotta git this body done. I ain't got no time to monkey with any 'gas.'"

The leather-aproned smith cussed as only a leather-aproned smith can cuss; then he added: "Ain't got no harmony at all in this here shop. Can't git nothin' done unless I do it myself. I'll git the 'gas' in a couple of minutes," he said. "Have to have a wood-and-paint man up there, but the sonufagun wan't do a darned thing for any other part of the shop, and if he does it takes him a week and then he don't do it right. Have more darned trouble with my help——

"Come on, now, Jimmy."

Reilly and the Sales Manager watched with interest while Jimmy, the smithy's son, grabbed one side of the big tire with a pair of tongs; the smith grabbed the other side and the hot iron band was removed from its bed of embers with a jerk. The smith poked a punch through a hole in the tire and the rim, he and the boy hammered the tire down into position, and, while the smith walked around upon the tire-stone and belted the wheel together with a hammer, Jimmy traveled a like course with a watering pot and cooled the tire before it could burn the felly. And even this entailed considerable verbal effort.

Rasping Relations Not Laughing Matter.

The smith gave a final yank to the cranked screw which held the hub down and left the rest of the job to Jimmy and his watering pots while the proprietor poured gasolene into Reilly's 'gas' tank.

As the car pulled out into the road with enough 'gas' in to get it home the two automobile men heard another inharmonious clash: "Come on! Come on, Jimmy! Don't pour water on that tire all day. Git at that other wheel!"

"Gee! But that old cuss has a tough time, doesn't he?" commented the Sales Manager, settling down for the ride.

"His disposition is partly to blame," responded Reilly. Then, after several minutes of silence, "But I'd 'can' that painter."

"He certainly seems to have trouble with his 'departments.'"

"'Ain't got no harmony' is a very good description, I should say; he evidently knows what ails his business and doesn't know how to remedy things. I would suggest as a starter that he develop a harmonious disposition himself."

"Guess I'll send down old Blukey from the factory; he's got a lot of ideas on coordination of departments and departmental cooperation."

"Well, believe me! It's not to be laughed at," retorted Reilly. "If a man can coordinate his departments and employes he has done one of the biggest things he can accomplish."

"So?"



"BUT WAIT! WE'VE FOUND MISTAKES. I'LL CALL UP THE SHOP"

"Quite so. That's one of the biggest things about the Old Man; he has pulled everything in the factory into line. That's one reason why you don't realize the value of what he's done; you don't know what it means not to have things working like a well-oiled machine."

"The organization certainly works well."

Carburetter Branch Worked Badly.

"You should get around and see how some of them don't work. I ran across a hot one a few weeks ago. You know Aleck McGraw, who used to live up next to me. He has a big, heavy, six-cylinder car and he thought the carburetter the manufacturer put on wasn't doing as well as it might. He nosed around and decided to put on a Mace carburetter——"

"That's a good carburetter, isn't it?" supplied the Sales Manager as Reilly broke off his conversation to concentrate on missing a passing car and the edge of a culvert.

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"Nothing the matter with the carburetter," replied Reilly, straightening away on a smooth stretch. "The trouble is with their branch in our town. It's run on a par with the old blacksmith's 'departments.' 'There ain't no harmony.'"

"What happened?"

"Well——" Reilly bit the superfluous fan-tailed effect from the end of his 'dry' cigar. "Well, McGraw went down to the Mace branch, as a beginning—he lives about fifteen miles out now, near his business. He told them the make of car he had and asked them if one of the carburetters would fit his wagon. The salesman was nice enough. He looked in a catalog and said the catalog indicated that special fittings would be required for the kind of car McGraw drives.

Foreman's Attitude Not Congenial.

"McGraw wanted to know how long it would take to get the special fittings made. 'Oh, two or three hours,' guessed the salesman. 'But wait,' he added. 'We've found mistakes in this catalog and it may be that your car won't require special fittings. I'll call up the shop.'

"McGraw could hear the conversation on both ends, the 'phone was such a loud one, and when the shop foreman said special fittings wouldn't be necessary McGraw rather doubted him because he said it in a tone of voice which indicated that he didn't give a darn whether it would fit or not. But the salesman said he was sure the carburetter would drop right into place. McGraw told him that the carburetter would be put on in a small shop several miles from town, in the garage where McGraw has some of his little jobs done, and that if it didn't fit it was going to mean a great inconvenience.

Lack of Harmony Led to Difficulty.

"But the salesman insisted it would fit; he said the mechanical man ought to know. McGraw is not much of an engineer himself, and he thought the salesman ought to know what he was talking about, so he put the carburetter in the car and drove home. When he got out there he asked the repairman to change the carburetters. The repairman got the car on the shop floor, took the old carburetter off and started to put the Mace on, but she wouldn't go.

"The repairman telephoned McGraw that special fittings would be necessary. McGraw said that couldn't be true, that the carburetter people had looked it up and were sure none would be required. But the repairman insisted that special fittings were necessary, so there was nothing for McGraw to do but have the things put back together again and make another trip to town. He was pretty sore about it and I guess he gave a young imitation of that blacksmith when he got started."

"That was a —— of a situation, wasn't it? Why don't the Mace people straighten things out?"

"I doubt whether they know about it; it's possible the branch manager doesn't know about it and has never thought of it, but it's certain the owners of the business aren't

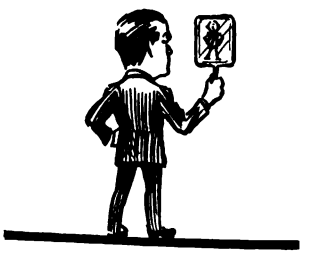


"HE SAID HE WAS BUSY AND I WOULDN'T KNOW ANYTHING ABOUT IT ANYWAY"

anxious to have such a rasping contact point between themselves and the public. That's the reason for a lot of this lack of cooperation in business; the man who would be the most anxious to remedy conditions doesn't know about it. He has his organization under him and believes it is doing its work as it should, and, busy in what he regards as the larger business affairs, he doesn't delve into this part of his business. I've often thought such men should drop into their branches or salesrooms once in a while and play the part of purchasers just to see how their customers are handled."

"I should call team work one of those 'larger business affairs,'" commented the Sales Manager.

"And so would anyone," agreed Reilly, slowing down as they passed a speed sign at the edge of the city. "There isn't a more important thing in any establishment. Ben Doyno has worked it out pretty well in his



"HE OUGHT TO LOOK IN A MIRRORSCOPE AND SEE HIS REAL SIZE"

supply store. Ben's a pretty affable sort of man and he is a good handler of men. Ben didn't call all his employes together and preach a sermon and he didn't paste up a lot of 'hot stuff' rules and suggestions on efficiency, but he has built a wonderful little organization. There isn't a man there who wouldn't jump quick to give a boost to any other department of the business.

"He pays his employes all they're worth and they have come to know that the man who sits back in the breeching and doesn't pull with the rest of the team isn't worth much. He makes a study of his organization and the man who pulls the best gets ahead the fastest. If a store salesman whistles up to the stockroom for something in a hurry, the stockroom lads send it down in a hurry, and everything works fine.

Doesn't Keep Man Who Can't "Fit In."

"Another thing Ben does is not keep a man who doesn't seem to be able to fit in with the rest. If a new man develops one of those I'm-a-salesman-and-I'm-not-supposed-to-do-anything-else attitudes and can't get over the disease he doesn't stay long. It isn't driving men, it's getting in and helping them to pull with you. Ben would just as soon sweep the floor if there wasn't anyone else to do it, and no man who works for him can afford to balk at imitating the spirit of the boss."

"Not everyone could do that," interposed the Sales Manager.

"Probably not," replied Reilly, "but they haven't all tried it, I'll wager. I went into a piano store the other day to ask about the insides of the machine we have up at the house and the salesman said he would take me up to their mechanical department. When we got there the head mechanical man said it wouldn't do any good to show me, that I wouldn't know anything about them if he did and that he was busy.

Spent Unneeded Time in Sputtering.

"I found out later that what he said was true; the adjustment I wanted made required an expert piano repairman and it wouldn't have done any good to have shown me the insides. But the repairman showed plainly that there was friction between the departments. The way he acted embarrassed the salesman and gave me a few bad minutes myself. If he had taken half the time he spent in sputtering and explained in a few words that an expert repairman would have to attend to the job it would have been about seven hundred per cent. better."

"And, again, probably the head of the house isn't aware of that friction."

"I was almost tempted to tell him, for his own good," asserted the dealer.

"As I suggested before, I think I'll send old Blukey down to see him," suggested the Sales Manager, who seemed to have a derogatory opinion of that member.

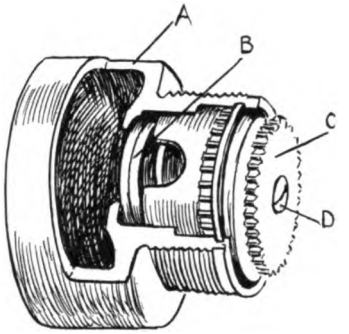
"A-g-g-h!" exclaimed Reilly. "His idea of cooperation is to have everyone do things his way. He ought to take a look at himself in a reducing mirrorscope and see himself in his real size."

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SIMPLE AUTOMATIC LOCK IN DUNLOP DETACHABLE WHEEL

Absence of Loose Parts and Positiveness of Lock Principal Features—American Production to Include Special Ford Wheel.

Having completed arrangements for the American production of Dunlop detachable wire wheels by the acquisition of a factory in Long Island City, and not in New York City as at first was proposed, the Dunlop Wire Wheel Corporation of America, which was formed last April with $400,000 capital to manufacture under exclusive American rights from the parent company in England, is practically ready to market its productions, though some few weeks still must elapse before deliveries can be commenced. In the meantime, the company, which as

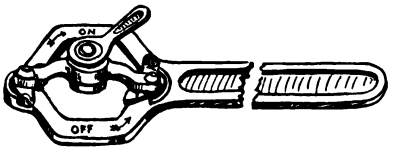


LOCKING DEVICE IN DETAIL

was stated soon after its formation has behind it such well known and influential persons as Horace M. Kilbourne of the National City Bank and Walter L. Fry, who is president of the company, is filling orders with imported wheels. Orson Kilbourne, son of H. M. Kilbourne, is vice-president and general manager of the company, which has removed its offices from 17 West 72d street to 2130 Broadway, where its sales and demonstration room is spacious and splendidly appointed.

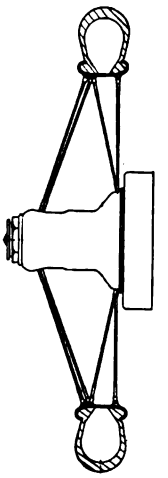
The Dunlop detachable wire wheel in its present form has been on the foreign market only about two years, though even in that comparatively short space of time it has demonstrated itself to be worthy of adoption by such well-known manufacturers as Minerva, Talbot, Panhard & Levassor, Rolls-Royce and a number of others. The American wheel differs not a bit from its foreign cousin and incorporates all of the distinctive and interesting features to be found in it, not the least important of which is the unusual and positive locking mechanism.

One of the most interesting features of the wheel as a whole is that it has not a single loose part; even when the wheel is taken off its spindle the wrench with which the work is done becomes, temporarily at least, a veritable part of the wheel, though



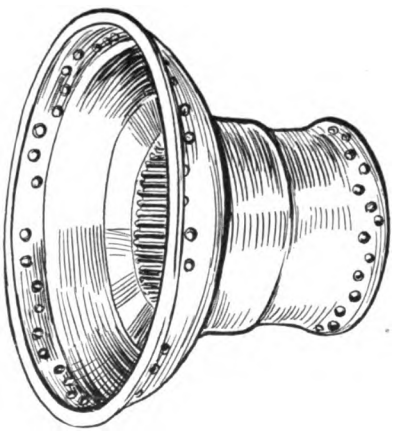
WHEEL REMOVING WRENCH

it can be removed easily enough for use on another wheel. The value of the elimination of small, loose parts is a feature that is self-evident, for it disposes of the possi-



SPOKING METHOD

bility of delay due to their loss or misplacement. Incidentally, apart from being ingenious, the Dunlop wheel is not by any means fragile, a high factor of safety being

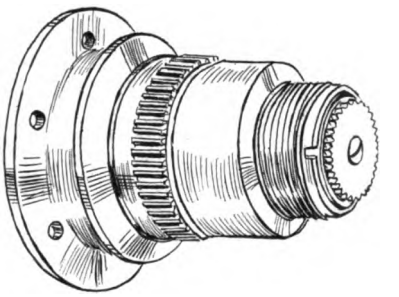


DRIVING SERRATIONS IN SHELL

incorporated in both design and construction quite as a matter of course.

Insofar as the design of the wheel itself is concerned, it is of the quadruple spoked type, one of the important advantages of which, outside of its resistance to shock coupled with the maximum amount of resiliency, is that it does not increase the distance between wheel tracks, which remain the same as when the ordinary type of artillery wheel is used. The spokes are arranged so as to form a series of double struts, their disposition being best made plain with the aid of the accompanying sectional drawing. Although not shown by the picture, the spokes are countersunk into the rims and the shells thus providing rigid support and eliminating the possibility of slackening through wear in the spoke holes.

The locking device, which is by far the most important part of any detachable wheel inasmuch as it virtually represents the assurance of safety or accident to those who ride in the car, differs from anything else of its kind primarily in that it is devoid of ratchets and pawls and delicate springs, and secondarily in that it is absolutely dust proof, the latter being a valuable feature in a mechanism outwardly exposed to road dirt for long periods without act-



DUNLOP HUB COMPLETE

ually coming into use. There is a spring in the locking mechanism, but it is an exceptionally heavy spring that nothing short of a fertile imagination could rupture during the life of the car.

It is upon this spring, in fact, that the operation of the locking device depends and because of which it is quite automatic in operation despite the thoughlessness of the operator; even if the wheel should be put in place and left unlocked, it would lock itself instantly at the first quarter revolution of the wheel in either direction.

The complete rear hub with the locking device assembled is illustrated herewith, and in another picture a part sectional view of the locking mechanism alone is shown. In the latter picture, A is the front of the inner hub and B is the heavy spring which actuates the lock; the lock itself is designated C; D is merely a plug for the insertion of grease so that the bearings can be lubricated without the necessity for dismantling the wheel. The teeth in the lock itself engage with similar teeth in the revolving nut on the wheel and prevent the nut from working loose. The better way to make the operation plain perhaps, is to

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describe the operation of removing a wheel.

The wrench with which the wheel is taken off is a special device and is illustrated herewith. In use, it is placed around the wheel nut, where it is held in place by the engagement of pawls in a special ring on the hub. The small handle then is turned to the right on a thread which forces the locking device in against its spring, thus disengaging the teeth. A few turns of the whole wrench to the left then suffices to disengage the wheel, which can be lifted off, disclosing the inner permanent hub and the driving serrations. The driving serrations in the wheel hub are shown in another illustration, which also makes plain the simplicity and the ruggedness of the construction; the shell is a steel stamping.

From the description of the wheel removing spanner and its method of use it should be apparent that it is impossible to remove a wheel until it has been properly unlocked. Incidentally, as the locking device is not enclosed but is out in the open —though there are no projecting parts to be knocked off or to catch in anything—a glance suffices to make plain whether or not the wheel is locked. In replacing the wheel, the operation of removing it is reversed, the wheel nut first being screwed up, after which the smaller handle is turned to the left, releasing the lock, which automatically engages its teeth with those in the nut. If, however, the wrench should be removed without first unscrewing the smaller handle so as to engage the locking teeth, the spring pressure behind the sliding portion is more than sufficient to force it out and bring the teeth into engagement: furthermore, if the teeth should be in a position, against one another, where they will not engage, the first movement of the wheel backward or forward will cause them to engage under the influence of the spring.

Needless to point out, the Dunlop detachable wire wheels are made in all the various rim sizes and may be had with either the straight clincher type rim or with the quick-detachable rim; inasmuch as no little of the advantage of the wire wheel exists by reason of its lightness at the rim, however ,the clincher type is to be preferred as being the lighter of the two.

In addition to supplying the regulation Dunlop detachable wheel, the American company also is specializing on a light, non-detachable wire wheel for attachment to Ford cars. In construction, the wheel is quite like its larger brother, except that it is devoid of the detaching mechanism, of course. Its principal advantage, outside of the advantages that are put forward for wire wheels in the concrete, is that it can be put on a Ford axle in place of the regular wood wheel without making any changes in construction whatsoever.

MOTORISTS UPSET LAW THAT GOVERNOR JAMMED THROUGH

Court Holds Ohio's Car Tax Unconstitutional—Says it Was Levied for Revenue Only — Defiant Executive Humbled.

The Warnes law, which Gov. Cox of Ohio is declared to have "jammed through" the legislature in the face of a storm of protests, has met the fate which the State's motorists have wished and predicted for it.

It was declared unconstitutional last week by Judge E. B. Kinkead, of the Franklin County Court, on the grounds that it violates that provision of the constitution which provides that taxation shall be levied at a uniform rate on real and personal property. This shelves the law and saves the car owners of Ohio from paying automobile taxes ranging as high as about $18, following January 1.

The suit which "broke" the law was filed by C. C. Janes, of Columbus, president of the Ohio State Automobile Association, against Secretary of State Graves. The law would tax cars according to their horsepower, ranging from $5 on electrics to about $18 for the larger gasolene cars. The measure further provided that one-third of the revenue should go toward the repairing and policing of the State's roads, although the State has made no provision for policing.

Judge Kinkead stated that there would be a surplus of $1,000,000 after the secretary of State defrays the expenses of administering the law, that $333,000 would go to the road repairing and policing and the other two-thirds to the State treasury.

Bearing out the court's opinion that the bill was designed for revenue only, it is stated by a delegation of Ohio motorists that when they went to the Governor to protest against the law he informed them that "the number of saloons in the State is to be materially reduced through the new licensing law. This, of course, means a heavy loss in revenue, and you automobile fellows must make up the difference. That's all there is to the matter."

Hill Climbing for a Bean Pot.

There was a hill climb in the city of Hartford—the one in Connecticut—on Thursday last, 13th inst., and the trophy was a massive bean pot. It came about in this wise: But before delving deeper into the mysteries of the Harmony Hill Climb Association, which was responsible for the event, it may be well to mention, casual-like, that Clayton P. Chamberlain, at the wheel of a six-cylinder Locomobile, won the ceramic object d'art—an object suggestive of leguminous banquets by families with gargantuan appetites.

The Harmony Hill Climb Association exists principally because of the efforts of E. C. Willson. Those who rally around him —about 25 in number—may be described without exaggeration as fairly well known persons in Connecticut's capital. All of them streaked away from home ties on Thursday afternoon to rendezvous at the corner of Albany and West Hartford streets, whence President Wilson led the cortege to Avon mountain, where the afternoon's activities wer ecommenced.

George L. Best started things by whirling up the slant in a Maxwell and thereafter at two-minute intervals seven others followed him to the top, and, whisper it softly, nearly every one of them beat him. Chamberlain, as already has been pointed out, made the best time, and this is how he finished at the head of the bunch:

Driver and car.	Time.
C. P. Chamberlain, Locomobile	3:14⅘
R. D. Britton, Everitt	3:29⅗
B. L. Newton, Cadillac	3:30⅕
F. E. Harvey, Packard	3:59⅗
H. R. Lathrop, Pierce-Arrow	4:00⅕
G. R. Best, Maxwell	4:00⅗
H. K. Taylor, Studebaker	4:22⅘
W. H. Scoville, Columbia	5:15⅗

After the timers had mastered the intricacies of their stop-watches and announced the times, the procession headed back to Hartford and came to a halt at the Hartford Club, where the hill climb was run all over again over "extensive arrangements to expedite the lubrication of all moving parts as well as a complete replenishing of such materials as are necessary to reproduce waste tissue," according to the program.

Curtain Fasteners that Should be in Order.

One of the most ordinary of the little things that can cause annoyance on a car is to have the fasteners for the side curtains out of order. When side curtains are wanted on the road they usually are wanted in more or less of a hurry, and then there is no time to fix up the fasteners. And who has not known the annoyance that can be caused by a loose corner? The time to put the fasteners right is when the car is in the garage and the work can be done at leisure—in other words, in time of peace prepare for war.

Gasolene War Brings Down the Price.

Missouri motorists have finally come into their own, due to the war between the Standard Oil Co. of Indiana and the Pierce Oil Corporation of Missouri. Two cuts in the price of gasolene have been made within a week, bringing the price from 17½ cents to 14½ cents a gallon, with the end not yet in sight. During the same period the price of kerosene has been cut from nine to seven cents a gallon.

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"SILENT SALESMEN" AND WAYS OF DRESSING THEM

Letterheads That Lack the "Appearance" Which the Employer Demands in His Flesh-and-blood Employes—Types of Well Chosen and Poor Styles—Simplicity and Neatness Always Safe Choice.

When the dealer sends his salesman to see a prospect it is safe to assume that he is certain the salesman has his face washed, hasn't a two-days growth of beard on his face and looks as if he had been put together by a tailor, not by an inventor of spring wheels.

This doesn't necessarily mean that the dealer calls the salesman up for inspection every time the latter contemplates going out to try to get a little business; what it means is that if the dealer is any kind of a dealer at all he never would have engaged the salesman if the latter had not been respectably and rather neatly attired. It doesn't imply that the salesman must be a dude or a fashion plate, but just a decent looking man.

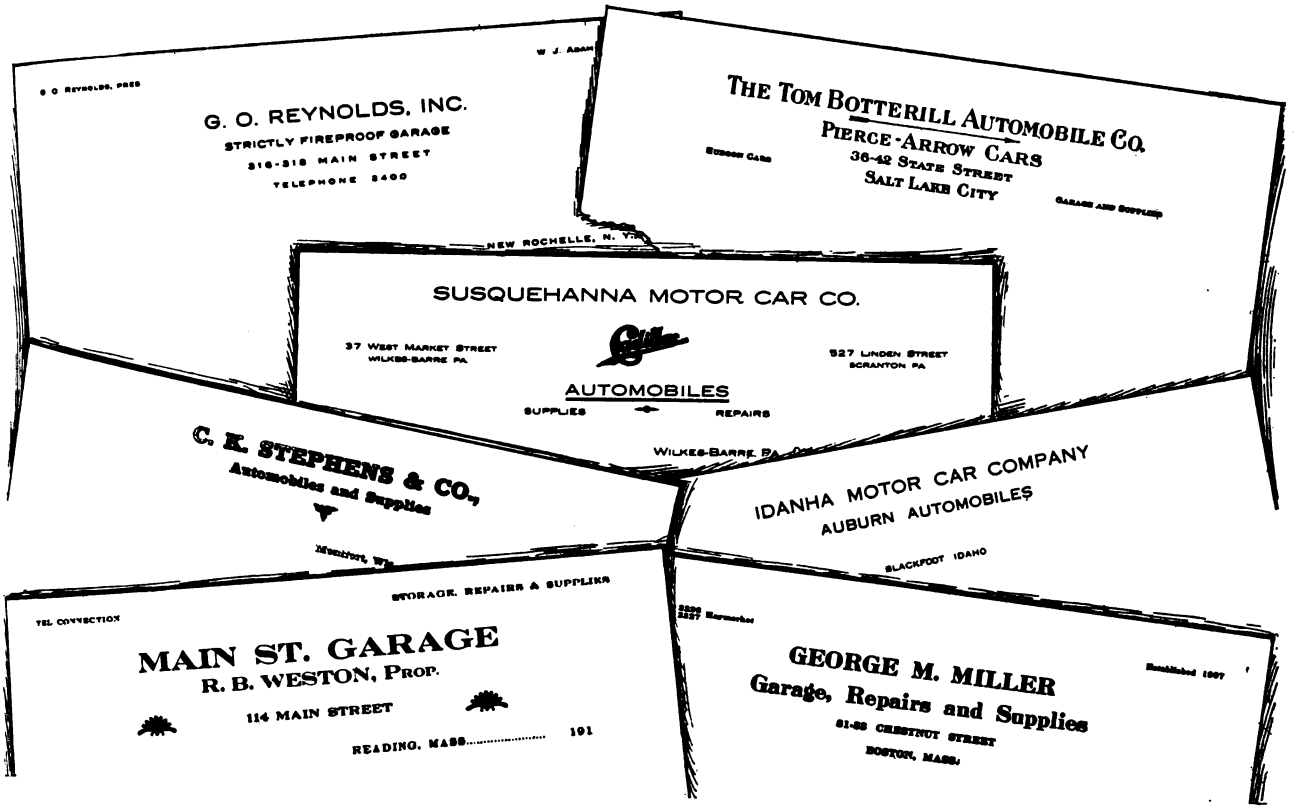
All this may apply to the attitude of the dealer or garageman toward his employes, the flesh and blood representatives which are the points of contact between his business and and the big public, but oftentimes the business men who are most strict in their requisites as to animate salesmen are very lax in respect to one other indication of the character of their business.

The salesman and other employes may be kept groomed like thoroughbreds while the employer many times a day sends out a "silent salesman" whose clothes are of the 1872 model and whose upkeep apparently doesn't run very high. This "silent representative" is the dealer's business letter paper. And while the quality of paper is an important item in the consideration, the letterhead which surmounts the message to the recipient of the missive is even more important.

There are letterheads and letterheads; they range all the way from regular letterheads to signboards, and some of them aren't even that—they're just a mess! How they ever got onto a sheet of business paper Heaven only knows; the dealer himself couldn't tell on a bet.

In Motor World's letter files are thousands of letters; they come from dealers, garagemen, accessory men and the multitude of tradesmen throughout the United States. These files contain probably a sample of nearly every variety of letterhead and in commenting upon this phase of business a few of most recent receipt have been selected as types, not necessarily as models to be followed, but as types to indicate what in the opinion of Motor World is the best form of head for business paper.

In the selection one consideration has been the location of the business man; it stands to reason that a big dealer in Chicago can get and afford a better job than a little garageman in Thief River Falls, and the group which has been selected as worthy of emulation by the man who is having a letterhead made up is one which

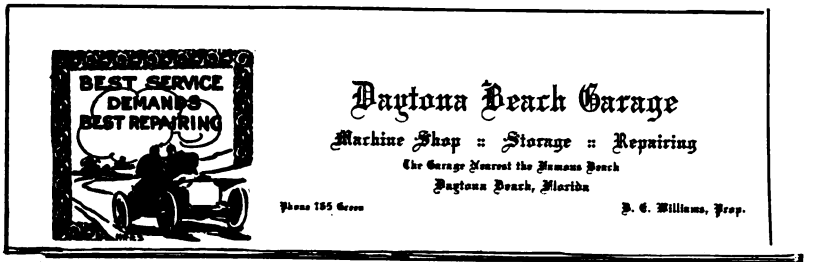


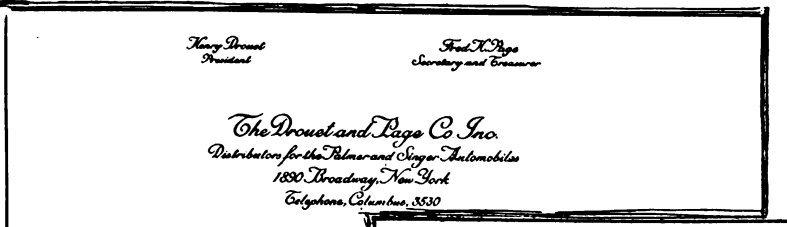
SEVEN WELL-DESIGNED LETTERHEADS THAT CANNOT FAIL TO CREATE GOOD IMPRESSIONS

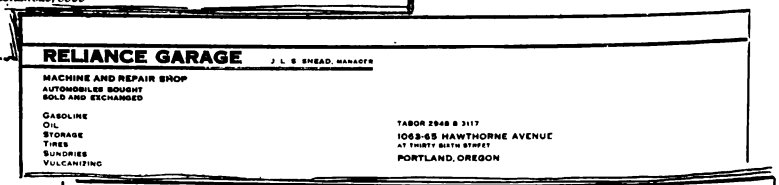
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could be made by a printer who had any kind of a shop at all.

In a group which is here reproduced two letterheads which are as neat, attractive and clean-cut as any are those of G. O. Reynolds, Inc., of New Rochelle, N. Y., and The Tom Botterill Automobile Co., of Salt Lake City. One is a small-town garageman and the other is a city dealer. The Reynolds design probably could be produced by any print-shop and is a close rival of the Botterill head for the dealer or garageman in the medium-sized towns. The









DISTINCTIVE STYLES THAT DEVIATE FROM THE ORDINARY

type comes within what the printing trade terms the Blair series of type, but seems a trifle heavier than the regular Blair.

The Reynolds head has the virtue of not assembling several different styles or series of type in the one head; too many styles work out on much the same plan as putting on a straw hat, an overcoat, a long rubber boot and a low shoe—they don't seem to fit well together; there is no harmony. This head is also well but simply arranged; the company name is the dominating part, the head is far from crowded and the two names on the upper corners add just enough balance.

Avoiding Crowding in Arrangement.

The Botterill head is of a different style; the Reynolds type might appeal to one man more than would the Roman characters in the Botterill head, but the latter is nevertheless one of the attractive letters circulated in the trade. This particular head is plate-printed, or engraved, and is an unusually good specimen of handicraft, but no dealer should experience much difficulty in accomplishing much the same effect even if it be not embossed, engraved or plate-printed.

In designing a heading the dealer who elects to follow these styles should notice that the heads are not crowded. The Botterill business is big, but all that is required is told in few words, whereas many a much smaller business carries a letterhead that is overburdened with type. The words "Hudson Cars" and "Garage and Supplies" under the wings of the inverted pyramid of type give a proper balance.

While the Reynolds and Botterill heads are cited as good examples the others included in the same group are good, even if not quite so good as the two mentioned. What is meant by balance is shown in the case of the Susquehanna Motor Car Co., which tops off its design with the company name, places its two addresses in smaller type and in subsidiary positions at right and left and below and brings up the bottom with the words stating what its business it. In the center is the Cadillac name—or trade mark—and while it is red in the original the use of color is questionable, because of its glaring, signboard possibilities.

This company has adhered to a Blair style throughout. The rule under the word "Automobiles" might have been left off and the little mark under the rule was classified by one of Motor World's printers as a "Dingbollick," whatever that is. He also wanted to know "what in —— they put that thing there for." This one remark may be crystallized into a caution against over-decoration. No decoration at all is better than too much, if it is not best in any case. The lower part of the Susquehanna head, with its rule and "dingbollick," tends toward decorativeness. The "curleycues" of the Cadillac name would have been quite sufficient.

Simplicity Always a Safe Choice.

The Idanha Motor Car Co.'s design appears to be in much the same type as the Reynolds and Susquehanna, but is more of a Medium Gothic. It is good because of its pure simplicity. It says enough and stops; no more is necessary.

George M. Miller and the Main St. Garage do very well with a somewhat heavier style of type. The Miller is a near approach to the Hancock series, while the Main St. is Mercantile type. Both of these are well-balanced, are not crowded and are neat. The Main St. attempts to effect balance by filling vacant space on both sides with a couple of "dingbollicks," whereas raising the head a trifle and bringing the "Tel. Connection" and "Storage, Repairs and Supplies" down would have been better.

C. K. Stephens & Co., while attractive and simple, differs from the others in that it employs an old-fashioned, shaded letter. This has an element of attractiveness even as some old-fashioned clothes have, but that is the main point of adverse criticism.

The Daytona Beach Garage, which employs an attractive Plate Text, would have done better had it omitted the over-decorated cut at the left. The head, of itself, is pleasing and refined, and how much better it might be may be shown by holding one hand over the black, heavy, decorated cut. There! Doesn't it look better?

The Drouet & Page Co., Inc., has followed what is in accordance with the pre-

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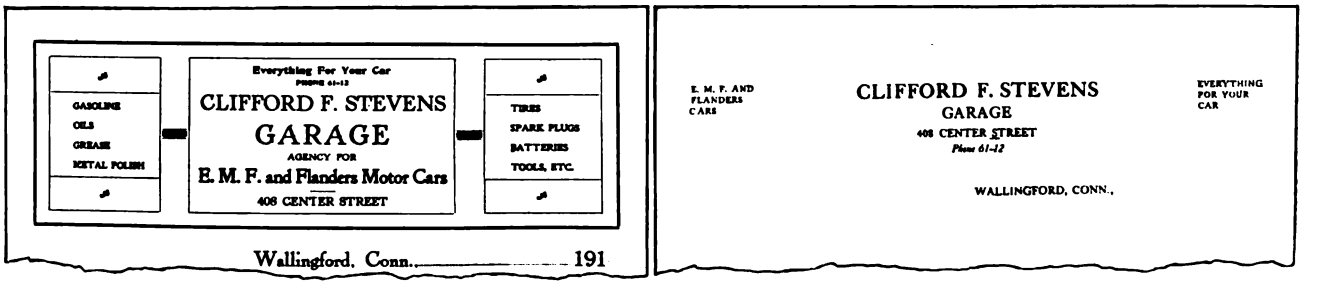
LETTERHEAD BADLY MARRED BY BLURRED PICTURE

cise and correct modern style of letterhead; this is script. Script may not appeal to many business men as in accord with the dry and routine matters which so generally find their way into business correspondence, and it certainly would be conspicuous if script goes out of style, but for a dealer who is distributing a car which is rated as having "class" the script head is so plain and understandable as a comparison. For this purpose Motor World has reset the Clifford F. Stevens head. The superfluous matter has been cut out, a better balance has been effected, and the rules and decorations which look like several truck gardens with a budding crop of cauliflower have been removed; they are unnecessary. Also one style of type, Caslon, consider using a poor-style card, or one covered with rules and adornments, and the letterhead takes the place of the business card in non-personal calls.

Getting as much type on a letter as is possible is not "getting your money's worth." The reverse is more the case. Many heads are due to the advice of small-town printers, many of whom have been left to work out the design without suggestions. Many of the best heads in use are the result of printers' planning, as are some of the worst, but there is no reason why the dealer or garageman himself should not design what he feels his business requires and make a selection which he would not be ashamed to hold up and say, "This is an indication of the character of my business."

Oil Shortage Pays More Fine Profits.

Due to that fearful shortage — don't laugh!—of crude oil which caused the price



OVER-DECORATED, CROWDED AND NOT WELL DESIGNED—THE SAME HEAD REARRANGED AND RESET

does well. It certainly fits in with the class of people who buy Palmer-Singer cars.

J. L. S. Snead did something original and "different" with his paper, which is brown; this colored paper is an asset in a way, in that the Reliance letter can be picked with ease from a stack of a score of plain white letters. The Service Motor Car Co.'s type probably could not be found in the average shop, for it resembles a reproduction of a hand drawing, although there are types which approach it. It, like the Reliance, is shown as illustrating something different from the ordinary.

The place of business of the B. & O. Motor Co. looks enterprising, but the company went away wrong when it elected to put that heavy black cut on its letter page. The original looks much heavier and more smeared than does the reproduction shown herewith and cannot compare with the heads in the group first discussed. The Jerome Garage Co. would have been better satisfied without the cloudy-day cut on the left of its sheet, and the possibilities in its arrangement are seen, as in a previous instance, by covering the cut with one hand.

But in all criticism and comment nothing has been used; the original contains three —De Vinne, Pabst and Jensen. A regular job shop might do even better, but the resetting serves to show what may be accomplished.

A cursory inspection should make apparent the attractiveness lying in the plain, neat and unembellished type of letterhead. If a calling card is made along these lines, why not a letterhead? Few dealers would

Getting as much type on a letter as is possible is not "getting your money's worth." The reverse is more the case. Many heads are due to the advice of small-town printers, many of whom have been left to work out the design without suggestions. Many of the best heads in use are the result of printers' planning, as are some of the worst, but there is no reason why the dealer or garageman himself should not design what he feels his business requires and make a selection which he would not be ashamed to hold up and say, "This is an indication of the character of my business."

Oil Shortage Pays More Fine Profits.

Due to that fearful shortage — don't laugh!—of crude oil which caused the price of gasolene to mount from 9 cents to 17 cents per gallon, the Ohio Oil Co., a former Standard Oil subsidiary, on Monday last declared not only its regular quarterly dividend of $1.25 per share but on extra disbursement of $6.75 per share. As the stock has a par value of $25, the extra payment is equivalent to 27 per cent. If oil has become thus more plentiful "gas" may come down—perhaps.



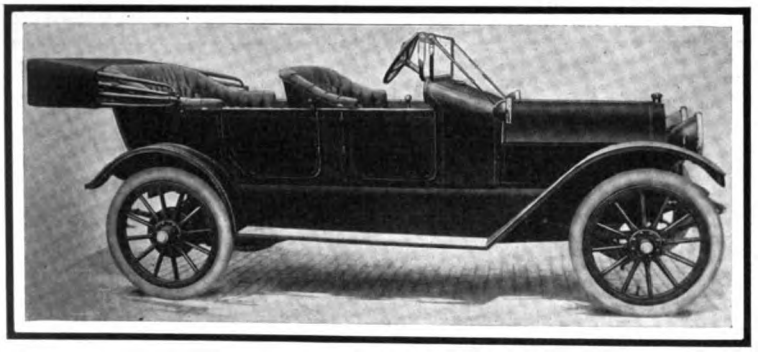
ALL THAT A LETTERHEAD SHOULD NOT BE

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CHOICE OF TWO MOTORS OFFERED WITH LAMBERTS

Continental or Rutenber Power Plant Optional in Two Models, One of Which is New—Shift to Left Control Among Changes.

In addition to adding to its line a new four-cylinder model slightly smaller than the one that has been standard for the past four or five years, the Buckeye Mfg. Co., of Anderson, Ind., long known as the producer of Lambert "gearless"—which means friction driven—cars, has inaugurated an innovation in engine equipment in both models which likely will prove an appealing feature to dealers whose prospects are "sot in their ways," so to speak, and who display a preference for a particular brand of power plant. In either model, the purchaser can be given his choice of Continental or Rutenber motor. Otherwise, the changes that have been made in the larger model are few and far between; it is styled model 60, series C, and lists at $1,395 without electric lighting and engine starting equipment, which increases the price $200. The smaller model—46, series C—lists at $1,200 with electric equipment. The larger chassis also is supplied with roadster body at $1,365.



NEWEST LAMBERT FRICTION-DRIVE MODEL LISTING AT $1,200

The two most important alterations that have been made in the larger model concern the fuel container and the control mechanism. Instead of being under the seat, as in the past, the gasolene tank now is housed in the deep skuttle after the most approved and modern fashion and the filler hole is located outside, where it is easily "getatable" without the necessity for disturbing any of the occupants of the car. The construction of the smaller model is the same. Also, in both models the steering gear has been shifted over to the left side in conformity with the natural tendency among the majority of manufacturers and the control levers have been placed in the center of the footboard. One interesting feature of the control is that the emergency brake levers are fitted with integral locks by way of discouraging the unwelcome attention of persons other than the owner.

As already has been made plain, in neither model is the motor an arbitrary feature, and both Continental and Rutenber products are sufficiently well known to the motoring public and to those who serve it to make unnecessary any detailed description of their individualities. Suffice it to say that in the larger car the motor may be either a Continental with four cylinders measuring 4⅛ x 5¼ inches, or a four-cylinder Rutenber with cylinder dimensions of 4¼ x 5¼. In the smaller model, the cylinder dimensions are the same whether the purchaser elects to cast in his lot with either engine maker; the bore is 3¾ inches and the stroke 5¼ inches. The smaller model differs from the larger one in that it is fitted with an electric lighting and engine starting system as regular equipment. The system, by the way, is guaranteed for the life of the car and not for any specified period.

Needless to point out, the distinctive gearless transmission system about which Lambert cars always have been built is retained in toto and without change. As an indication of the growing popularity of the system it is pointed out by the manufacturers with just pride that during the past year the demand for Lambert cars has resulted in a 40 per cent. increase in sales over the preceding year.

The Lambert friction system probably is familiar enough to those who are familiar with it and a reiteration of its description can serve only to make plainer its inordinate simplicity. The engine drives a flat metal disk against the edge of which there is pressed the periphery of a paper-fiber faced driven member which slides across the face of the driving disk is on a splined shaft. From the splined shaft power is transmitted to the rear axle through the intermediary of a Renolds "silent" chain which is fully enclosed in a dustproof casing and runs in an oil bath. The various forward gear ratios are obtained by sliding the driven disk across the face of the driving disk to a spot near the center for low gear and to a spot near the edge for high gear; sliding the driven member across the center of the flat side gives the reverse motion. The mere fact that the system has endured for the past five years is an eloquent tribute to its reliability and its efficiency under all sorts of conditions.

With regard to the bodies on the two Lambert models, the changes that have been made have been suggested by the possibility of increasing the bodily comfort of those who ride in them and are in line with the latter-day practice of other makers. Which is to say, seats have been made a little roomier and are padded a little more thickly. At the same time, the doors have been slightly widened and their hinges and catches put out of sight along with such things as generally litter running boards. The spring suspension remains unchanged and includes semi-elliptic members in front and full-elliptic members at the rear; the wheelbase of the larger model measures 117 inches.

Although the list price of the larger car does not include electric lighting and starting apparatus, the list is otherwise complete and includes mohair top with boot and side curtains, windshield, speedometer and the other usual features. For the smaller model the equipment list is the same, except that it includes the electric lighter and starter without extra cost.

Engineers' School Owes for its Rent.

When the West Side Y. M. C. A., of New York City, took over the New York School of Automobile Engineers, Inc., a few weeks ago it was not generally known that the latter owed its landlord quite a little bill; that such was the case, however, is indicated in a suit which was filed this week in the Supreme Court for New York county against the school by Guillaume Reusens, landlord of the premises at 146 West 56th street, into which the school moved October 1, 1908, under the annual rental of $2,000 Reusens claims but $280 was paid since April 1 last, leaving a balance of $720, which he demands.

Cox Establishes Branch in Chicago.

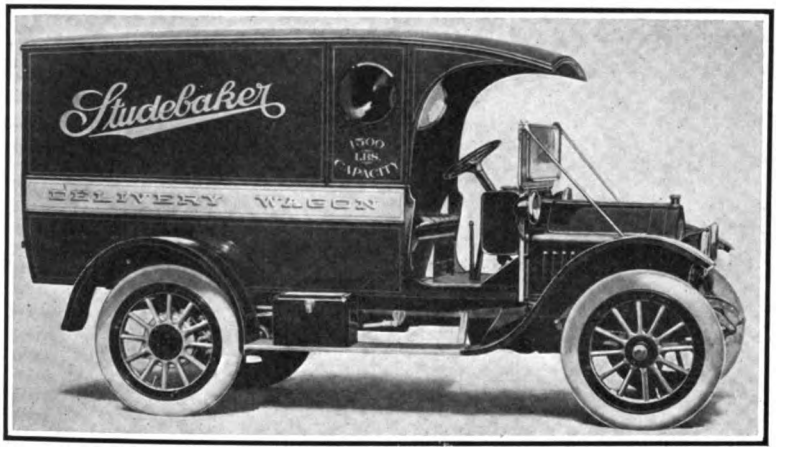
The Cox Brass Mfg. Co., of Albany, N. Y., has established a branch in Chicago, at 1345 Michigan avenue, where a full stock of its shock absorbers, carbon removers and other accessories will be carried. It will be in charge of Charles Fisher, who previously had to do with Mogul trucks.

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SELF-STARTING STUDEBAKER FOR LIGHT DELIVERY WORK

Latest Commercial Car Also Has Electrical Lights—Four-Cylinder Motor Under Governor Control—Optional Body Types.

With a keen appreciation of the vast difference that exists between the service expected of a pleasure car and the work demanded of a commercial vehicle, even though it be a light delivery car, the Studebaker Corporation, of Detroit, has designed a chassis for rapid delivery work that is distinctly a working chassis in every respect—and the fact that its four-cylinder motor is identical with that used in the Studebaker



STUDEBAKER ELECTRICALLY LIGHTED AND STARTED DELIVERY WAGON

"four" pleasure car merely indicates that the engine is plenty sturdy enough for the service, having been designed with the distinct intention that it should be amply able to stand up under hard work.

From a purely enginering point of view the machine, which has a capacity of 1,500 pounds, is devoid of novel features. There is not a single attempt to work in something "unusual" for the sake of being different from the others. From the point of view of the user of commercial vehicles, however, there is an unusual feature in the electric lighting and starting system which, be it said, is installed for the most practical of reasons. In making the many stops that are necessary when delivering small packages there inevitably is a loss, when no starter is fitted, of time in cranking if the motor is stopped, or of fuel if the motor is left running. With the electric starter both are eliminated, for the driver presses the heel-button when he gets into his seat and the thing is done. With a good starter the gasolene car is invested with one of the prime advantages of the electric—economy of time and economy of power when making stops.

The motor does not differ in its major aspects from the four-cylinder motor that was part of the smaller "four" of the preceding Studebaker series, unless the addition of a governor to compel the maintenanne of a reasonable maximum speed may be considered in that light. The cylinders are cast in a single block and the bore and stroke are 3½ x 5 inches; all the valves are on the left side and are enclosed. It is necessary to take a look into the cylinders for at least one of the slight alterations that have been made. The pistons, which were domed on top in the older Studebaker models, now are flat-topped, this form having been proved to have advantages that were well worth seizing. The piston pins are clamped in the connecting rod ends, as before, but whereas they formerly worked in bearings bored in the cast iron of the piston bosses, they now are mounted in removable bronze bushings.

The electric lighting and starting equipment is of the dual unit type, there being a generator and a separate starting motor and, of course, the indispensable storage battery. The motor and generator are made by the Wagner electric company of St. Louis, the specifications being provided by the Studebaker engineers. The former system was of the single unit design. The generator is on the right side of the engine and is driven by a shaft taking motion from the camshaft gear through a pinion; the starting motor is on the left side and drives through a roller clutch and chain. The gear reduction is about 20 to 1. The Willard six-volt battery is slung to the chassis frame. The employment of an automatic overrunning clutch makes manual control unnecessary for engaging or disengaging the starting drive. With the change in the electrical system has come also a change in the ignition. In lieu of a magneto there is a distributer and coil taking current from the storage battery.

The frame of the delivery car is different from that of the pleasure car in that it is considerably heavier and is straight. In fact, all the parts are heavier than the pleasure car parts. The rear axle is full-floating, with Timken roller bearings, and is of a size and weight calculated to give the freedom from trouble and delay demanded in a commercial machine. The wheels are 34-inch, with 4½-inch pneumatic tires, and the wheelbase is 106 inches.

Whether the machine is equipped with an express body with a canopy top or with a panel body—the Studebaker people give the option—the price is the same, $1,150. The purchaser also can specify the maximum speed for which the governor is to be set and sealed. Left steer and center control are standard.

Free Export Trade School Opened.

To further the foreign trade interests of this country, there was inaugurated in New York on Tuesday last a free export trade school by the foreign division of the National Association of Manufacturers. This school is intended to give additional training to employes of the association's members who already have some experience in export business. For the present the sessions will be held in the association's library on Tuesday and Friday evenings. The course is under the supervision of V. Gonzales, the association's foreign trade and banking expert, and 48 men have so far enrolled. It includes commercial geography, means of transportation and details of obtaining and maintaining foreign business, the relation of American money to that of all other commercial countries, and instruction in handling exchange in foreign trade.

Federal Branch in its Own Building.

The New England branch of the Federal Rubber Mfg. Co., of Milwaukee, formerly located at 261 Dartmouth street, Boston, has been removed to the new and larger building at 173 Massachusetts avenue which was erected specially for its occupancy. It will remain in charge of Chase Langmaid and Guy D. Nibes, who will act as joint managers.

Eisemann Moves Offices to Brooklyn.

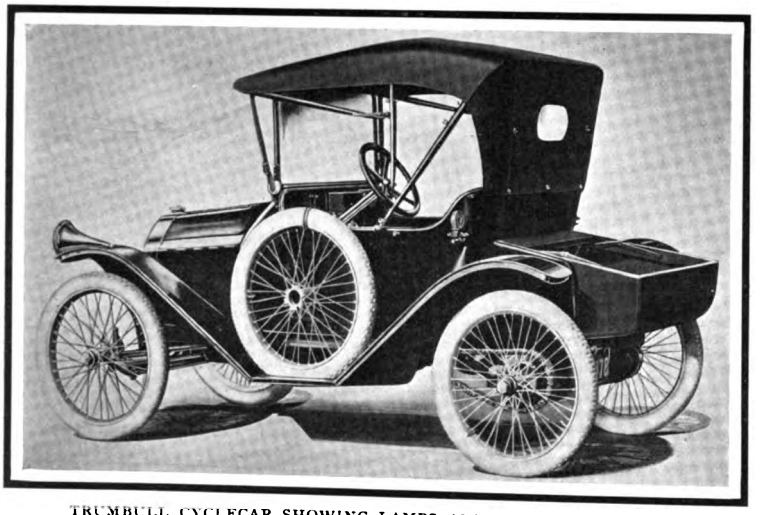
The Eisemann Magneto Co. has removed its general offices, which, of course, include the sales department, from 225-227 West 57th street, Manhattan, to the other side of the big bridge, that is, Brooklyn, N. Y., where its factory is located in Bush Terminal Building No. 8, at 32 33rd street. The service station at the Manhattan address, however, will still be continued.

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FIRST TRUMBULL CYCLECAR IS MINIATURE AUTOMOBILE

Four-Cylinder Water-Cooled Motor with Starter, Friction Transmission and 44-Inch Tread its Features —To Sell for $425.

Following the acquisition in August last of the American Cyclecar Co. by the Connecticut Electric Mfg. Co., of Bridgeport, Conn., which, in turn, is owned and controlled by A. H. and I. B. Trumbull, the first product of the company, which retains its original title, now is ready for the market. Its lines, revealed by the accompanying illustration, make plain that it is a veritable miniature automobile exhibiting very few of the attributes generally credited with the responsibility for the designation "cyclecar." The list price of the car has been set at $425 and this includes the equipment that is shown in the picture and a mechanical engine starter that is not shown.



TRUMBULL CYCLECAR SHOWING LAMPS AND EXTENSIBLE BACK

In at least two respects, the Trumbull cyclecar, as it is styled, is true to its class; "all on," as the British say, which means with all the equipment in place, it tips the beam at about 650 pounds and therefore is considerably under the R. A. C. limit, which has been arbitrarily set at 784 pounds. Similarly, its tread is considerably less than that of a full-sized car, measuring but 44 inches.

In other respects, however, the construction of the little car closely follows accepted automobile practice. The power plant consists of a four-cylinder, vertical, water-cooled motor with L-head cylinders measuring 2⅞ x 4 inches; the A. L. A. M. horsepower rating therefore is 13.37. Ignition is effected by a Unisparker, with automatic advance, furnished with current from a storage battery; moving parts are lubricated partly by pump feed and partly by splash, the main bearings having direct feeds.

As suggesting the simplest possible mechanism for the purpose, combined with light weight and comparatively low manufacturing cost, the manufacturers have adopted the friction type of transmission. From the motor, power is transmitted to a heavy plate beneath the body, and against it the driven disk is pressed. The latter is slidably mounted in its shaft so as to provide the necessary changes in gear ratio. At the outer ends of the splined shaft there are sprockets from which the drive is transmitted to the rear wheels through the usual side chains. The differential is contained in the cross shaft, and the brakes, which are of the external contracting variety, are mounted on rear wheel drums and operated by pedal.

The wheelbase is 80 inches and the chassis is mounted both fore and aft on transverse semi-elliptic spring members shackled to the axles. The frame is pressed steel with a channel section and the motor is supported at three points. Detachable wire wheels are standard equipment and they are shod with 28 x 3 inch clincher tires. One interesting feature of the wheels is that they may be removed without the necessity for disturbing the bearings; incidentally, they are interchangeable.

The body is of the standard roadster type with a large luggage compartment at the rear which is unlike anything else of its kind. So that it can be made to accommodate either much or little, it is extensible and, when fully extended, provides rather more storage space than might be supposed in such a small car. Following the latest practice,the gasolene tank is placed in the deep skuttle, and, it is pointed out by the makers, the fuel consumption of the motor is so moderate as to allow of at least 35 miles being covered on a single gallon of fuel. The single pair of lamps is mounted on the mudguards and to provide for accommodation to city driving regulations a dimming device is furnished as standard equipment.

In addition to the usual complement of tools, jack, tire pump, etc., the equipment list includes top with side curtains and envelope, adjustable windshield, electric lights fed from a storage battery, mechanical engine starter operated from the driver's seat, an electric horn and an oil gauge.

September Gasolene Exports and Prices.

Gasolene exports during the month of September just passed gained by 12,279,739 gallons, or 174 per cent., over the shipments of the product during September of a year ago; Other Europe was the largest purchaser and, as is usual, the price to the different geographic divisions varied, even for the same month. The exports follow, the figures being given in this order—Country buying, gallons in September, 1912, value, average price; gallons in September, 1913, value, price:

Belgium—27,114, $4,662, 12.2 cents; 740,000, $112,500, 15 cents. Netherlands—None in September, 1912; 2,400,000, $336,000, 14.8 cents. Other Europe—5,208, $1,356, 26 cents; 7,671,309, $1,049,582, 13.7 cents. Canada—6,396,432, $765,377, 12 cents; 4,179,278, $486,737, 11.6 cents. Argentina—62,000, $9,970, 16.1 cents; 2,180,581, $383,665, 17.6 cents. Brazil—95,077, $18,806, 19.9 cents; 1,113,413, $215,220, 19.4 cents. British Oceania—None in September, 1912; 435,500, $91,886, 21.1 cents. Other Countries—459,701, $82,203, 17.9 cents; 595,190, $118,113, 19.8 cents. Total—7,045,532, $882,374, 12.5 cents; 19,325,271, $2,793,703, 14.4 cents. The average price for the whole increased 1.9 cents, or 15 per cent.

Cold that May Make Starter Sluggish.

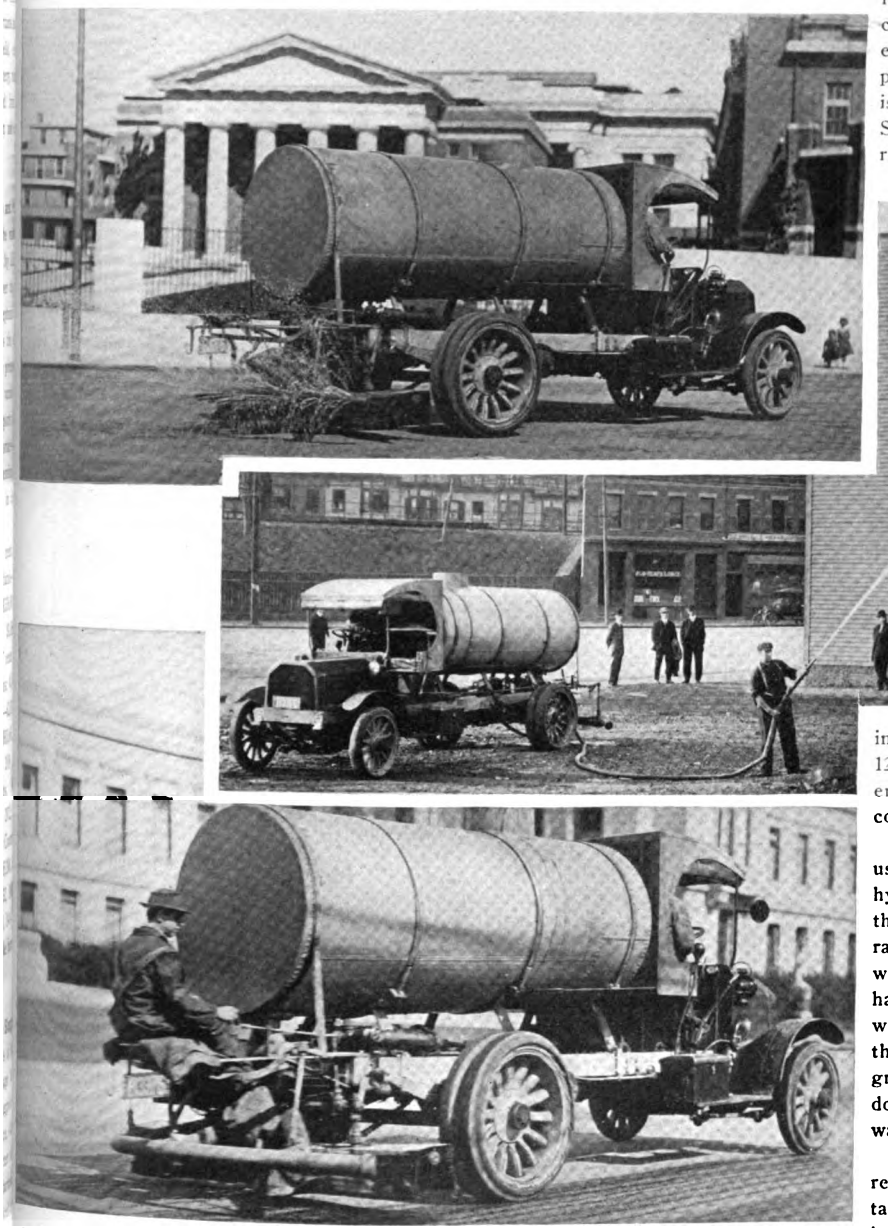
It is one of the characteristics of the ordinary type of lead-acid storage battery that its action is likely to be sluggish when the electrolyte is chilled. Hence, sluggish response from the engine starter after a car has been housed in an unwarmed garage all night should not be harbored against the system as a defect. As the battery is used, the chemical action will raise its temperature a certain amount and the response will be quicker. The obvious way to overcome such difficulties, of course, is to warm the garage.

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PEERLESS TRUCK IN BOSTON BECOMES HIGHLY VERSATILE

Service Changed to Suit Seasons—Accomplishments Range from Collecting Garbage to Extinguishing Fires.

Whether or not there is truth in the ancient adage which says that there is no rest for the wicked, it is certain that there is no rest for a certain Peerless three-ton truck that belongs to the city of Boston. The civic authorities of the city of erudition have learned, among many other things, that a motor truck pays the best returns on the investment it involves when kept steadily at work; and as the machine cannot be kept at the same job all the year round for the simple reason that some jobs, such as street sprinkling, are rather out of place in freezing weather, it has been provided with the equipment necessary to enable it to do both summer and winter work. It is a striking illustration of the adaptability of the motor-driven commercial vehicle.



BOSTON'S VERSATILE THREE-TON TRUCK—AS AN ORDINARY STREET SPRINKLER; AS A FIRE ENGINE AND AS AN OIL DISTRIBUTER

To prove that if the job won't dignify the truck the truck must dignify the job, the Peerless is used in the winter for the collection of garbage. The body fitted is of the power dumping type, the lifting action being obtained through the medium of a screw gearing. In this service the machine covers about 40 miles a day doing the work of four teams.

When the spring sun becomes hot enough to make the roads and streets dusty the truck is stripped of its dumping body and in its place is mounted a 900-gallon steel tank. This may be filled either with water for sprinkling and flushing the streets or with oil for surfacing macadam roads. A rotary pressure pump driven by power, of course, discharges the liquid "road refreshers" under a pressure that is entirely independent of the amount left in the tank. It is usual to sprinkle and flush the streets on Sundays and on days when the macadam roads are not in proper condition for oiling. The sprinkling speed of the truck is 12 miles an hour; the routes formerly covered by three horse-drawn sprinklers are covered by the machine.

The pressure pump is made additionally useful when the machine is out of reach of hydrants. By means of a three-way cock the pump can be made to draw water from railroad and other tanks. Horse-drawn watering carts are filled by long labor at hand pumps from such sources of supply with a considerable loss of time. Clearly the time saved in filling up by power is a great gain in the total time required for doing sprinkling and flushing with tank water.

For use as a road oiler the only change required is a change in the contents of the tank; a little water in the oil or a little oil in the water can do no harm. The truck speed is considerably less for oiling than for watering, being 8 miles an hour. The pump forces the oil into the road at a pressure of 45 pounds to the square inch and discharges a load in 18 minutes, covering a

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surface of 12,500 square yards. Before the coming of the Peerless it was necessary to employ no less than six horses to do the work.

Even this does not end the list of useful purposes to which this versatile truck is put. When the tank is full of water the machine can be converted into a fire-engine of no mean ability by diverting the course of the water from the pressure pump through a two-inch hose instead of through the sprinkling pipes. Fires in dump piles are not unusual occurrences, and the Peerless fire engine is useful for putting them out and, of course, it can be pressed into service under any circumstances where a stream of moderate size will answer the purpose. The accompanying picture gives some idea of the volume of a stream that can be thrown and the height it will reach.

Promoting Fire Extinguisher Equipment.

By way of encouraging dealers, manufacturers and individual owners of automobiles to take precautionary methods against fire, the Ætna Accident & Liability Co., and the Automobile Insurance Co., of Hartford, Conn., which jointly issue a combination automobile policy covering fire, accident, liability and practically every other kind of an automobile hazard, have let it be known that henceforth the premium rate on vehicles equipped with fire extinguishers of an approved form will be considerably less than the premium rate on vehicles not so equipped. To dealers and manufacturers, a discount of 10 per cent. on the fire premium will be allowed, provided the vehicle is equipped with a one-quart pump-type Pyrene extinguisher approved by the National Board of Fire Underwriters; to individual owners, the discount amounts to 15 per cent. To take advantage of the discount, the person applying for insurance must furnish a certificate to the effect that the vehicle to be covered is equipped with the approved type of Pyrene device.

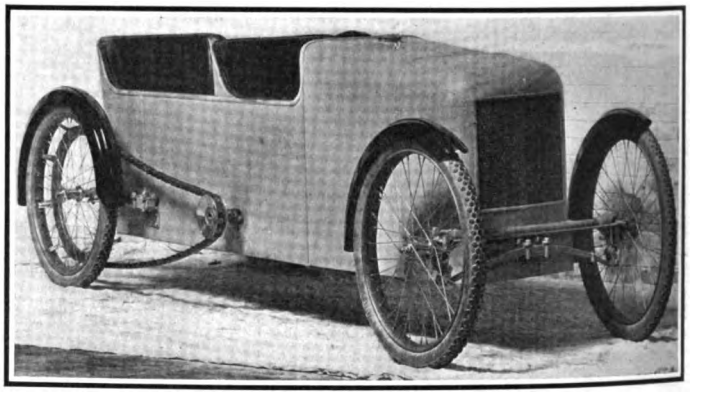
Pays $400 for Misdescribing Bottles.

Even though the Interstate Commerce Commission may not be generally known to have this power, it successfully prosecuted a case of misdescription of freight this week in the Federal Court in New York City against the American Thermos Bottle Co., a fine of $400 resulting from the defendant's plea of guilty. The commission charged that the bottle company labeled boxes "glass bottles" when they should have been labeled "insulated and jacketed bottles." The rate for the former is much less than that for the latter. The prosecution was at the instance of the Trunk Line Association.

FRICTION DRIVEN MERCURY HAS REAL CYCLECAR LINES

It's the Real Thing, not a Compromise —Has Neither Frame, Differential, nor Gears, and Has an Air-Cooled Motor.

One of the newest cyclecars, which is an out-and-out cyclecar, with all the cyclecar's characteristic features, narrow tread and all, and that doesn't pretend to be anything but a cyclecar, is the Mercury, the product of the Mercury Cyclecar Co., of Detroit. The appearance of the machine speaks very distinctly for itself, as the accompanying illustration shows, and, though the picture does not bring out the fact, there is a surprising amount of space for the two occupants, due largely to the fact that they are seated tandem. The driver sits in the front seat.



MERCURY BELT-DRIVEN CYCLECAR IN WHICH PASSENGERS SIT TANDEM

The more important details of the Mercury cyclecar include a Spacke De Luxe motor, air-cooled, of the two-cylinder V-type, friction change-speed system, final drive by V-belts, 36-inch tread and wire wheels. In the construction of the machine there are a number of points where it has been found possible to effect economies in weight and in price—the machine sells for $375, incidentally — without affecting the good qualities of the car. For instance, there is no frame, properly speaking, distinct from the body, which is as much as saying that the body acts as the frame. The single front spring is a transverse semi-elliptic, underslung, and the rear springs are quarter elliptics with one end bolted to the body and the other clipped to the rear axle, which, of course, is of the stationary type.

The wire wheels run on ball bearings, reducing friction to a minimum, and are 28 inches in diameter with 2½-inch pneumatic tires. The wheelbase is 100 inches, which is ample for easy riding and yet not so long as to make the machine unwieldy in its overall length. The engine is, of course, mounted forward under the hood and the gasolene tank is placed in the cowl, high enough to give a good head of fuel to the Schebler carburetter. Ignition is by Bosch high-tension magneto, and lubrication is effected by a simple though efficient gravity system.

The friction transmission system is particularly adapted to the needs of light machines; in the two-disk arrangement used in the Mercury, but one part is subjected to sufficient wear and tear to call for occasional replacement, and that is the driven wheel, which has a fiber-filled edge which can be cheaply replaced in half an hour with a wrench and a screwdriver as tools. The machine manifestly is economical in other respects, for the tires are comparatively inexpensive on account of their small size, while a gallon of gasolene is said to give from 40 to 50 miles on the road, in average running.

Owner Was Exasperated $2,950 Worth.

When the generator won't generate and the starter won't start and a few other things about a car act in a contrary manner the driver—or would-be driver—generally is exasperated, to put it mildly; just how exasperated he is he probably couldn't state himself, but a valuation has been placed on this state of mind by Harry F. Payer, an attorney, of Cleveland, O., in a suit brought by him against an automobile dealer.

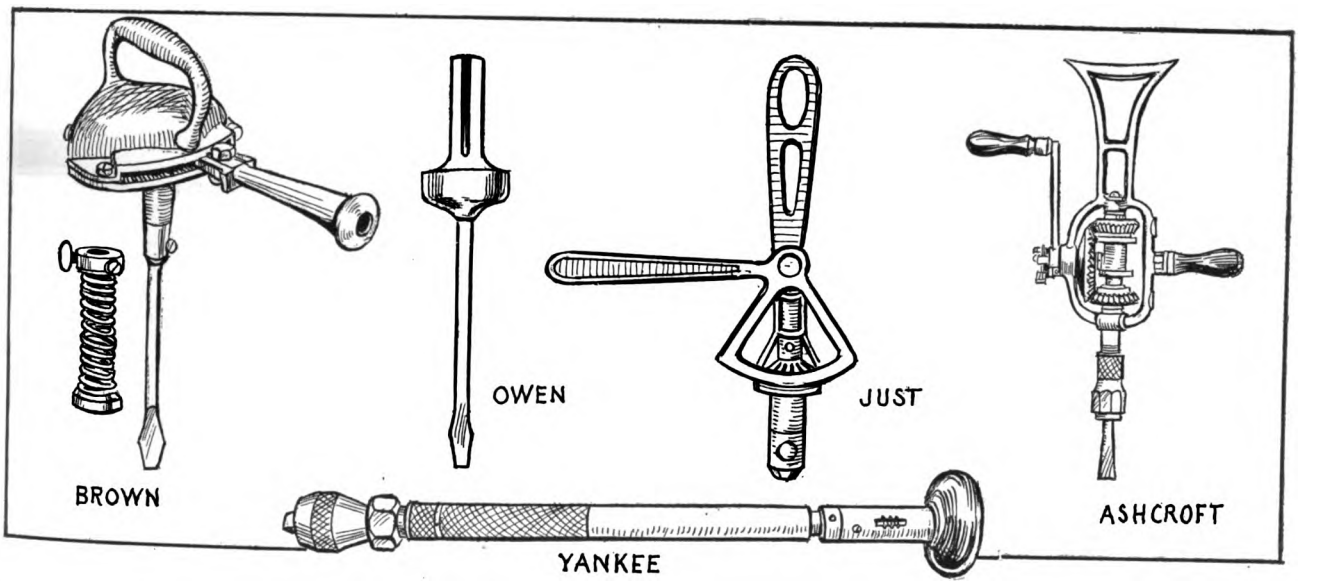
Because the car Payer bought from the dealer turned out to have many defects, so he states, and caused him great exasperation he has figured out that the latter is worth $2,950; in fact, he paid but $2,050 for the car, and in his complaint he asks this amount, too, the combined sums footing up to a total of $5,000.

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DEVICES THAT FACILITATE GRINDING OF VALVES

Simple Garage Tools That Should Relegate the Screwdriver to the Background—Their Value As Stock in Trade and for Everyday Use—Why Specially Developed Abrasives Are Better Than Emery.

It is one of the evils, perhaps, of the ordinary type of poppet valve that it requires to be ground from time to time. Some of them will go for longer periods than will others without manifesting the necessity for grinding, though the fact remains that they must all be ground in the end—that is, if the engine is to be run at anywhere near its proper efficiency.



FIVE TYPES OF SIMPLE VALVE GRINDING TOOLS THAT ARE SUITABLE FOR GARAGE EQUIPMENT

Of course, no repair-man needs to be told these things; experience is a grand little teacher. Similarly, most individual owners know them, but that some of them don't is well indicated by their labored attempts to force their cars up inclines that once could be "taken on high like a scared cat." At any rate, reiteration of the statement serves to draw attention to the fact that even in such matters as valve grinding, accessory manufacturers have kept more than one eye wide open to the possibility of producing devices that will permit the work to be done quicker and better and with less real labor than it ever could be done with a plain screwdriver or a brace with a screwdriver bit.

The amount of valve grinding work done in the average repair-shop is not very great—unless the shop is a very large one, of course—which probably accounts for the popularity of screwdriver and brace and bit methods. The inclination to install special tools for such a limited amount of work is not strong in the majority of breasts, though if it were stronger the repair business probably would be placed on a firmer footing. It is a foregone conclusion that shop efficiency requires that the greatest amount of good work be turned out in the smallest amount of time, and there can be no gainsaying the fact that tools which are especially designed for one kind of work are better for that work than are other tools primarily designed for something else and used as a sort of makeshift.

Profit That Lies in Small Tools.

But barring the desirability from every view-point of proper valve grinding tools for the use of garage and repair-shop employes, there is another side to the question. In many cases, the individual owner prefers doing odd jobs about his car himself, not so much to save the expense of having others do them for him as for the real enjoyment he gets out of the work. As a rule, this class of owners forms an excellent source of profit to the garageman who is awake to the possibilities of his business. Such persons generally are on the lookout for new devices; their possession and their use appeals more or less to their vanity or to something else that gives them pride in owning good tools.

The garage proprietor who is aware of this frailty of human nature is a "wise guy," to use a slangy expression that loses nothing for being slangy. He will put on his shelves—or, better still, he will display in a showcase—small tools of the kind along with his stock of spark plugs, greases, pliers, grease guns, etc. The effect of the arrangement can be expected to work out something like this:

Jones, whose car is being overhauled, drops in to take a slant at the work. In the course of his inspection he catches slight of the garage mechanic grinding valves with a little nickel-plated device that certainly does the work a good deal quicker than Jones has ever seen it done before with a screwdriver. Jones thinks it's a pretty good thing. Business of inquiring its name and where it can be purchased. Jones winds up by exchanging a check for a patent valve grinder and the check goes into the garage proprietor's cash register.

Of course, the system applies to other things as well as to valve grinders. But valve grinders are a good thing to make a start on; there probably is greater variety in such things than the average person guesses; they are inexpensive, easy to op-

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erate and there always is a use for them. In the accompanying illustration five different types of tools designed especially for the purpose are shown by way of making plain the variety that exists.

Valve Grinding Operations Made Plain.

Assuming that even the veriest novice knows how to go about the work of grinding valves—that the valve must not be rotated continually in one direction on its seat for fear of wearing ridges in it that can only be removed by resurfacing the valve in a lathe; that, instead, it must be rotated first about three-quarters of a turn in one direction and the same amount in the other; that only light pressure is needed, for heavier pressure will cause ridges; and that the valve must be lifted off its seat every once in so often the better to distribute the abrasive material that is used—the operation of the Owen valve grinder, which is produced by Stewart & Co., of 175 Broadway, New York City, becomes delightfully simple.

The Owen valve grinder undoubtedly is the simplest of all such devices. As the accompanying illustration makes plain, it is little more than a modified screwdriver and it is used in exactly the same manner as one. There is this important difference about the tool, however. It is considerably heavier than a screwdriver; between the handle and the blade, and forming part of the handle, in fact, there is a weight cast, and it is this weight that makes the operation of the tool so easy and the results obtained with it so uniform. In operation, the tool is merely rotated between the hands; it is not necessary to employ pressure, for the weight serves that end, and as the weight remains constant the surfaces on a number of valves are sure to be uniform provided the same amount of work is done on each. To make the operation of the tool easy, the handle is fluted and a supplementary spiral spring for lifting the valve off its seat is supplied with the device.

Wherein Abrasive Materials Differ.

A word with regard to the abrasive material that is best to use with any valve grinding tool: There are on the market an almost unlimited number of special and patented materials which have been developed especially for the purpose and which can be expected to do the work quickly and efficaciously. For the most part they are compounds of carborundum or powdered glass or emery and a mediumly heavy grease to serve as a vehicle; some, however, are mixed with a vehicle that is solvent in water. It is advisable, where possible, to use such materials in preference to anything else, for as a rule they are quicker and sharper than either powdered emery or powdered glass and are not as likely to leave ridges on the valves and valve seats. Finely powdered emery long has been the favorite of the old-fashioned mechanic, but great care must be taken when it is used, for it is likely to leave ridges. The concensus of opinion seems to be that powdered glass is the better material to use in the absence of some special compound.

Incidentally, it may be well to interpolate, by way of dampening the ardor of those who imagine that a valve grinder represents a palliative for all valve evils, that badly pitted valves, or valves that have deep ridges in their seats, require something more than mere grinding. A whole lot of grinding may cure them; but much the better plan is to resurface them in a lathe or with one of the several resurfacing tools that are on the market. In grinding valves, it is not necessary to continue the operation until the whole of the surface is polished, thus giving indication that all of it comes in contact with the valve seat. An unbroken polished ring about an eighth of an inch in width all the way around will suffice.

Devices That Impart Semi-Rotary Motion.

But to get back to the tools themselves: The Just Simplicity valve grinder, which is produced by the J. H. Just Specialty Works of Syracuse, N. Y., is as simple as its name implies; it scarcely requires any description at all, for all of its parts are shown by the accompanying illustration. There are only two parts, in fact, neglecting the chuck for holding the screwdriver bit—the handle for holding the tool and the handle for operating it. The latter is connected to the chuck through the intermediary of bevel gearing, which makes plain that a straight up-and-down movement of the handle rotates the screwdriver bit backward and forward just the required amount for proper grinding. The chuck, by the way, is mounted in ball bearings, thus making the operation of the tool quite easy.

The Brown valve grinding tool—or, rather, the Brown valve grinding set, for it consists of three things, the tool, a spring and the grinding compound—is a little more pretentious than any of the others and has been designed primarily as a tool kit adjunct; it is produced by the Brown Co., of Syracuse, N. Y., and is shown complete in the accompanying illustration. As is the case with the Just device, the Brown imparts a semi-rotary motiton to the valve, the important difference between the two devices being that whereas the former requires an up-an-down motion in operation the latter operates by a horizontal motion of the actuating lever. The lever, by the way, can be taken off, as can the screwdriver portion, and the whole device packed into a box of very small compass.

The horizontal actuating motion necessary with the Brown is multiplied in the device itself through the intermediary of rack and pinion gearing that is completely enclosed. In operation, the tool is held with one hand by means of the handle provided at the top and only sufficient pressure exerted to overcome the lifting spring which is fastened to the valve stem. The spring itself is brass and is fitted with collars having two set screws permitting adjustment to stems of varying diameters. Once the collars have been adjusted, the adjustment is not disturbed, the spring being tightened in place by means of a thumbscrew provided for the purpose. The compound is a high grade abrasive held in suspension in a suitable lubricant and is in the form of a paste.

Combining the Valve Grinder and Drill.

The Ashcroft valve grinder, which is marketed by Stevens & Co., of 375 Broadway, New York City, differs from any of the others in construction; unlike them it is a little more than a mere valve grinder; it is, in fact, a combined heavy breast drill with a ratchet handle and a valve grinder. As an ordinary breast drill the device is no less powerful and quick acting than it is as a valve grinder; a chuck is provided to hold all the ordinary sizes of straight and taper shank drills. To obtain the necessary backward and forward motion of the screwdriver bit for valve grinding an ingenious cam arrangement is employed. The cam is mounted at the inner extremity of the short shaft, which carries the bevel driving gear with which is rotates. This cam comes in contact with a collar on the central spindle when the handle is turned and shifts the two driven gears so that a continuous rotary motion of the handle becomes a semi-rotary motion at the valve. In other words, when the driving gear meshes with the upper driven gear the spindle makes three-quarters of a turn in one direction before the cam moves and shifts the other gear into mesh with the driving gear, thus causing the spindle to move one-quarter revolution in the opposite direction, the operation being repeated as long as the handle is turned.

Somewhat like the Ashcroft in utility, though totally unlike it in appearance and construction and operation, the Yankee push brace, which is designated among the multitudinous Yankee products by the number 75, has a wide field of usefulness about an automobile repair-shop or a garage, not the least important of which is the grinding of valves. The tool has not been designed as a valve grinder, nor is it especially recommended for the work by the

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makers, North Bros. Mfg. Co., of Philadelphia, Pa. The fact remains, however, that it will grind valves and grind them quickly and well with a minimum of expenditure of muscular power on the part of the operator.

The tool is styled a push brace because it will hold all the tools ordinarily held by brace or breast drill and is operated simply by pushing the handle down and drawing it up, a spirally slotted steel rod in the center imparting motion to the chuck that holds the tools. Inasmuch as the chuck moves one way when the handle is pushed downward and the opposite way when the handle is pulled up, the simplicity of obtaining the necessary reciprocating motion of the screwdriver bit is plainly apparent. In using the tool, however, it is necessary to move the handle only about three inches in each direction in order to obtain three-quarters of a turn of the valve in each direction. Used for purposes other than valve grinding, the tool has four movements—right-hand, left-hand, plain and ratchet—the ratchet movement being used for the occasional heavy work that cannot conveniently be done by the push movement.

Putting Spark Plugs in Cylinders.

Putting spark plugs into cylinders is quite a scientific little performance all by itself, and the way it is done has a great deal to do with the way it must be undone. In other words, the way a plug is put into the cylinder is what determines the way the plug must be taken out. There are two things to be considered. The plug must be gas-tight, and it must also be tight enough so that it will not work out of itself. Beyond this there is no earthly sense in tightening a plug, unless one wants to help on the spark plug industry by spoiling plugs.

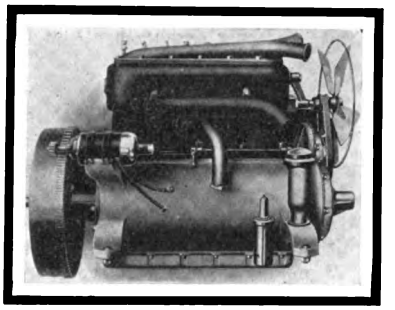
Bearing in mind the fact that a gas-tight plug is tight enough, it is easy to see how foolish it is to put a wrench on the plug and lean back until not another fraction of a turn can be taken. This sort of a proceeding wears the thread, flattens the gasket until it has no life left and causes porcelain breakage. Another point is that a plug expands when heated while the hole in the cylinder contracts, making the joint tighter when the engine is hot than when it is cold, though it is a common thing to hear the contrary view expressed. A plug screwed into a cylinder hard and tight when the engine is cold may be almost immovable when the engine is hot. On the other hand, a plug put into a hot cylinder is likely to loosen up considerably when the engine cools and present difficulties, possibly, in effecting a removal. Plugs should, therefore be tightened enough to prevent leakage—and no more.

RUSHMORE ENGINE STARTER STARTS THE CAR AS WELL

Makers Recommend the Practice as Harmless to Battery and Motor—Characteristics of Latest Rushmore-Regal Equipment.

Indicating its measure of faith in the ability of its latest type starting motor as applied to the new model T Regal cars, the Rushmore Dynamo Works of Plainfield, N. J., has placed itself on record with the rather unusual recommendation that not only the engine but the whole car, engine included, be started at once by the simple expedient of pressing the starting button.

The recommendation grows out of the fact that the Model C starter with which Regal cars are equipped is so abundantly powerful that it will "spin" the engine at practically the same speed, regardless of whether it is pulling the car in low gear or



RUSHMORE-REGAL STARTER

not. So confident of the ability of the starter is the Rushmore company, in fact, that it has offered to stand back of the Regal company in a challenge to the whole field for a 'starter race" for a liberal prize to the car equipped with a starter other than a Rushmore that will beat the Regal across a line 25 feet from the start when propelled by its starter alone.

The Model C starter with which Regal cars are equipped is exactly the same as the model adopted for standard equipment by the Simplex company, and though it weighs but 30 pounds and is only five inches in diameter, is sufficiently powerful to "spin" the Regal motor at 200 revolutions a minute with wide-open throttle. Under the conditions, it draws 100 amperes at six volts; the working efficiency of the motor is 72 per cent. Indicating the reserve power that remains, it is pointed out that the torque developed when turning the Regal motor at 200 revolutions is but 2.2 foot pounds whereas the maximum torque obtainable is 27.4 foot pounds before the motor will stall. As may be seen by the picture, the starting motor is mounted on the gasolene engine on a bracket cast integral with the crankcase and drives through the intermediary of gearing cut in the periphery of the flywheel. The Regal cylinders measure 3¾ x 4½ and the starting motor gearing is 7 to 1.

Meaning of Ampere-Hour Capacity.

Due in no small degree to the widespread adoption of electrical apparatus for the modern automobile, much of the confusion over electrical terms that not so long ago harrassed the individual motorist no longer exists. The majority of terms now signify something definite to the man in the street, though no little confusion still exists concerning the term "ampere-hour capacity" as applied to a storage battery. The term means, briefly, that a 120 ampere-hour storage battery will light lamps drawing 10 amperes for just 12 hours. The term signifies, in other words, the normal rate of discharge multiplied by the length of time the discharge will remain practically constant. However, it is one of the characteristics of the storage battery that its ampere-hour capacity is dependent upon the rate of discharge. Thus, though the 120 ampere-hour battery will light lamps drawing 10 amperes for 12 hours, it will light lamps drawing only five amperes for more than 24 hours.

Necessity for Proper Consistency in Grease

In packing differential cases with grease, it is well to remember that the grease must be thin enough to work in between the teeth of the gears or it will do no good. If the grease is too thick, the gear teeth will merely cut a path in it. It is a good plain to use grease that will just flow without being heated in the summer and a slightly lighter grade in the colder months to offset the natural thickening due to cold. If the grease is too thin it is likely to work along the shafts and get into the brakes.

Where Tires Must be Securely Fastened.

With the growing practice of carrying spare tires at the back of the tonneau the necessity for perfectly secure fastenings becomes of greater importance. Probably few persons would be likely to overlook the loss of a tire from the running board with the car under weigh; and probably still fewer would know of one lost from the back until the car was garaged.

Precautions Necessary When Tinning.

When tinning metal surfaces by dipping it is not always sufficient to immerse the parts to be coated in melted metal. With some fluxes it is necessary to rub the surface to cause the solder to adhere; a flat-ended copper rod answers the purpose.

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FAR-REACHING RULES FOR NEW YORK DEALERS' RUN

Accessories and Tires as Well as the Car to Be Subjected to Penalization—Classification by Piston Displacement.

That 500-mile New York Reliability Contest which is to be started in New York by the Motor Dealers' Contest Association on December 3rd next, is likely to prove a hummer, as far as the rules are concerned. For not only will penalties be meted out for time lost on the road, as is usual, and for work done on the cars, as well as for discrepancies shown by a final technical examination, but every accessory on every car with the exception of the clock is to be taken into account as well in the final reckoning—not even tires are overlooked, 10 points being charged for blow-outs, though punctures are not counted, and engine starters, of whatever type, must be capable of performing their duties in a maximum of two minutes, or the score of the entrant will suffer.

The rules as they have been laid down are by far the most complete that ever have been promulgated for any reliability contest and suggest those tried in Chicago several years ago, which brought howls from car makers who were penalized for such trifles as broken lamp lenses. In the concrete, they differ from the American Automobile Association Grade I rules in three important respects: Accessories are included as part of a car and as such are subject to penalization; tire blow-outs are penalized; and the cars are classified according to the piston displacement of their motors, a method which is brand new.

The complete rules, which are in the hands of George Robertson of the Auto Supply Co., Broadway and 59th street, who also has the entry blanks, reveal that the contest is to be a class E non-stock event.

Entrants will be divided into two classes, according to the cars they drive, one class being for touring cars and the other for roadsters. Both of these classes will be further divided, cars with less than 230 inches displacement going into Division I, those with between 231 and 300 inches going into Division II and all those over 301 inches going into Division III. Touring cars will be required to carry four passengers whose average weight is 125 pounds, or the equivalent in ballast supplied by the committee, and roadsters must carry two passengers whose average weight is 125 pounds. Cars in Division I will be required to maintain an average speed of 16 miles an hour; those in Division II, 18 miles an hour, and those in Division II, 20 miles an hour.

As is usual, the penalty for work done on the road is one point per man per minute, except where parts are replaced, when the penalty is doubled. Work on tires, however, can be done without penalization—including the adjustment and removal of non-skid devices—and "time out" is allowed for it; this does not apply to blow-outs, as already has been made plain. Work of the kind must be done on the road, the penalty for entering a garage being disqualification. Gasolene can be replenished only at regular controls under penalty of 3 points per occurrence for other replenishment and the same penalization applies to water and oil stocking. In each control, 45 minutes is to be allowed for lubrication of the car. As usual, motor stops will be penalized at the rate of one point per minute. All parts are to be sealed, and the breaking of any seal will cost the entrant five points. Discontinuance as a contestant carries with it 1,000 points penalty, in addition to any that may have been earned.

The rules covering derangements of the motor and running gear made manifest by the final out-door operative tests conform to A. A. A. regulations and include five points for a missing cylinder and 10 points for a perceptible knock in the motor; five points if the car fails to climb a six-inch curb, the motor stalls or the wheels do not spin with the clutch in and low gear engaged; 25 points if any gear in the gearset is inoperative and similar penalties for lack of proper functioning of automatic gear shifters or multi-speed rear axles; one point on the brake test if the car fails to stop within 50 feet, five points per foot for failure to stop between 60 and 70 feet, and 10 points per foot for failure to stop in more than 70 feet.

Penalties for derangements disclosed by the final technical examination also conform to A. A. A. regulations and range from five points for a broken spring to 500 points for a broken frame member or a broken crankshaft, including penalties on carburation, ignition, cooling and lubrication systems of from one to 25 points.

Penalties for faulty equipment, one of the new parts of the rules, summarized are as follows: One point for a loose windshield bolt to five points for a cracked or broken glass; one point for a loose lamp to five points for a missing one; one point for each loose speedometer nut or bolt to 25 points for an instrument entirely inoperative; one point for a loose horn nut to five points for an inoperative horn, the same minimum and maximum penalties applying also to tire racks and bumpers; shock absorber penalties range from two points for a broken rebound strap or a loose nut to five points for a broken shock absorber; tops, from two points for broken bow holders or straps to five points for a broken bow; storage batteries, from three points for replacing a battery where no recharging apparatus is part of the equipment, to 25 points for a discharged battery that is part of a lighting system including generator; gas lighting, 25 points each for inoperative generator or gas tank; electric generator or starter, 25 points each for failure to operate; bodies, from one point for broken or loose floor-boards to six points for broken fender irons or running-board brackets.

The contest is to be started each day from in front of the headquarters of the association in the Manhattan Automobile Club, 222 West 59th street, the first day's run taking the entrants out over Long Island roads, the second day over Westchester and Connecticut roads, and the third day to Poughkeepsie, N. Y., and return. Each night the cars will be garaged and under the eyes of observers. The entry list closes with George Robertson at midnight, December 1st.

Speed Law Doctors Assemble Tomorrow.

The General Conference of Interstate Commissions, which aims to effect more uniform automobile and traffic legislation, will convene in New York City tomorrow, 21st inst. Among the objects of the conferees are uniform touring privileges, uniform speed laws, and a general averaging up of the conglomerate mass of statutes now extant. The meeting will convene in the Hotel Belmont and will be attended by officially appointed representatives from the following 11 States: Massachusetts, New York, New Jersey, Connecticut, Pennsylvania, Maryland, Maine, New Hampshire, Vermont, Rhode Island and Delaware. There undoubtedly will be a great conflict of opinions and if the conference is able to harmonize them and effect anything approaching real uniformity it will be remarkable, indeed.

Objects to Speed of German Royalty.

America may have its troubles with speed law violators, but it has not the same class of speed violator which has been made the object of censure by Berlin newspapers; the Morgen Post appeared a few days ago with an objection to the manner in which the cars of the royalty are piloted about the streets, calling attention to the fact that within a short time five fatalities have resulted. The Post declares that the royal cars have become a "perfect terror in the streets, owing to their reckless pace," and demands that such machines shall in the future be subject to the rules governing ordinary traffic.

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Service

Now go on and smile—with some it may be a sad smile. All because this word service is the most universally used and abused word in automobile selling. Our ambition is not merely the sale of a National but the pride in keeping it sold to a satisfied customer.

THERE is no generally accepted standard by which you can judge service. Experience is the only way to find out, and sometimes this is too unfortunate and too costly. Everybody promises service; every dealer offers service as an inducement; every manufacturer boasts of his service. This word is becoming a joke—and a disastrous joke.

AS a matter of fact, every dealer and every manufacturer can not give the same degree of good service. Yet, when a man looks along auto row for a car, he gets equal promises of service from every dealer. Even if the dealer means well, he won't give good service to his customer if the factory the dealer represents does not give **him** good service. As a result the public has grown skeptical—and it is the manufacturer's own fault. Service-promises mean much or nothing, depending upon who makes the promise.

Stock Champion.
Fastest
Stock Car Mile.

National

International
500-Mile
Record Holder

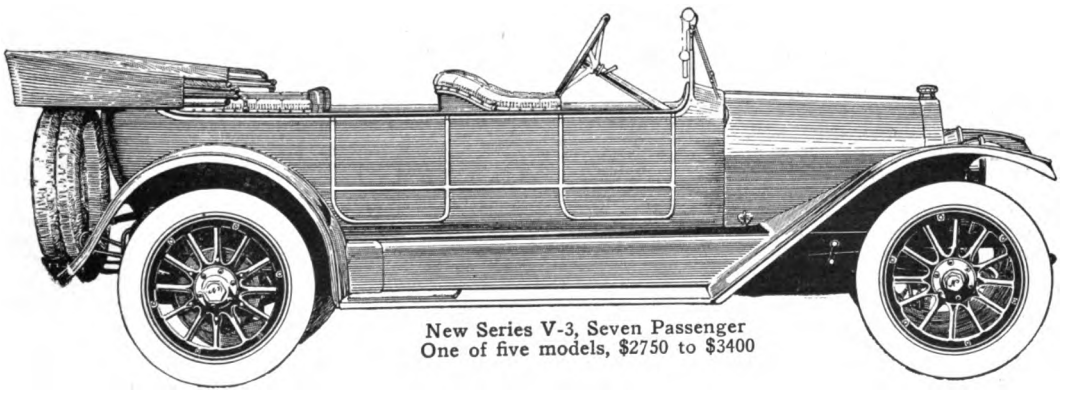
The National Motor Vehicle Co., Indianapolis, Indiana, offers you the following service guarantee. We believe no other company can give you better, and we know we can give you all we promise. Ours **is** a prosperous concern, and therefore in a better position to be liberal.

1. Service starts with the National car and is not a mere after-apology. We put service into your car when it is built so that it requires a minimum attention in your hands.

2. A company of 14 years' success, of enviable reputation and stability as well as ability is your guarantee that our promises will be fulfilled.

3. Liberal attitude toward dealers in supplying parts with dispatch and cheerfulness and in guaranteeing to private owners that every National dealer's service will be satisfactory.

4. Our policy is to keep our good name and our cars' good reputation above reproach. **Satisfied** and service-fied customers is our successful ambition.



New Series V-3, Seven Passenger
One of five models, $2750 to $3400

Let us tell you the story of our National Cars.
Own a National and avoid motor worries. Write us.

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1,064,381. Resilient Tire. Marshall C. Rogers, Williams, Cal. Filed Feb. 15, 1912. Serial No. 677,848. (Wheel with peripheral rubber tire and an inner rubber cushion.) 4 claims.

1,064,389. Dirigible Light. Ralph De Slazo Smith, Cordell, Okla. Filed June 8, 1912. Serial No. 702,611. (Headlight moving with steering gear.) 1 claim.

1,064,391. Pneumatic Tire. Enos Stanley, Des Moines, Iowa. Filed Nov. 11, 1910. Serial No. 591,768. (Puncture-healing compound for inner tubes.) 5 claims.

1,064,438. Spring-Wheel. Frederick William Bristow, Dorrisville, Ill. Filed Dec. 23, 1912. Serial No. 738,336. (Wheel with crossed spring spokes.) 1 claim.

1,064,454. Lamp Support for Vehicles. Arthur E. Dobbs, Winona, Minn. Filed July 31, 1912. Serial No. 712,607. (Headlight moving with steering gear.) 1 claim.

1,064,476. Gasolene-Eugine. William E. Haskell, Brattleboro, Vt. Filed Dec. 22, 1911. Serial No. 667,279. (Rotary valve.) 14 claims.

1,064,496. Automobile Front Axle. Carl Lagergren, Osterville, Mass. Filed Feb. 23, 1912. Serial No. 679,325. (Steering road wheel pivoted on two balls.) 5 claims.

1,064,514. Method of Regulating and Controlling the Valve-Motion in Explosive-Motors. Gustav Meec, Barmen, Germany, assignor, by mesne assignments, to The Colonial Trust Company, trustee, Pittsburgh, Pa., a corporation of Pennsylvania. Original application filed Apr. 16, 1904, Serial No. 203,450. Divided and this application filed Jan. 18, 1906. Serial No. 296,668. (Motor regulation by control of quantity and quality of mixture.) 1 claim.

1,064,581. Means for Cooling Combustion-Engines. Harold S. Wheeler, Manistee, Mich. Filed May 13, 1910. Serial No. 561,080. (Forced air cooling system.) 1 claim.

1,064,582. Motor-Vehicle. Oswald B. Wippler, St. Louis, Mo. Filed July 3, 1912. Serial No. 707,511. (Detachable body.) 4 claims.

1,064,587. Hand-Grip. Arthur Youngs, Newburgh, N. Y. Filed Jan. 15, 1912. Serial No. 671,151. (Hand-warming grip.) 2 claims.

1,064,611. Tire. William G. Chipley, New Orleans, La., assignor to Pneumatic Rim & Tire Co., Wilmington, Del., a corporation of Delaware. Filed Apr. 10, 1911. Serial No. 620,038. (Double-chambered pneumatic tire.) 1 claim.

1,064,615. Testing Device for Motor-Vehicles. Charles John Cooke, Albany, N. Y. Filed Dec. 20, 1911. Serial No. 666,935. (Flexible tread upon which car runs, remaining stationary while tread runs over rollers driven by car.) 2 claims.

1,064,623. Automobile Running-Gear. Christian W. Duerrstein, Guilford, Ill. Filed June 20, 1911. Serial No. 634,229. (Steering road wheel mounting.) 1 claim.

1,064,627. Vaporizer. Orville H. Ensign, Los Angeles, Cal. Filed Jan. 5, 1912. Serial No. 669,672. (Carburetter with inverted spray nozzle.) 23 claims.

1,064,628. Carburetter. Orville Hiram Ensign, Los Angeles, Cal. Filed Apr. 11, 1912. Serial No. 690,191. (Carburetter with inverted spray nozzle.) 8 claims.

1,064,636. Spring Vehicle-Wheel. John Gibson, Courtenay, N. D. Filed June 28, 1912. Serial No. 706,508. (Wheel with spring-and-plunger spokes.) 3 claims.

1,064,656. Vapor-Engine. William G. Johnston, Woodbury, N. J., assignor, by mesne assignments, to The Engineering and Development Company of America, Salisbury, Md., a corporation of Maryland. Filed May 2, 1910, Serial No. 558,838. Renewed Aug. 31, 1912. Serial No. 718,145. (Opposed cylinder two-cycle motor.) 13 claims.

1,064,661. Unperforable Metallic Band for Tires. Georges Auguste Victor Longuemare, Ste. Adress, France. Filed July 22, 1911. Serial No. 639,877. (Metal tire armor with rubber cover.) 2 claims.

1,064,662. Transmission Lever. John M. Mack, Allentown, Pa., assignor to International Motor Company, Wilmington, Del., a corporation of Delaware. Original application filed Apr. 28, 1906, Serial No. 314,226. Divided and this application filed Mar. 7, 1910. Serial No. 547,733. (Gear control system.) 3 claims.

1,064,694. Mechanically Operated Road Map. Max Bremsy, New Rochelle, N. Y. Filed Sept. 8, 1909. Serial No. 516,779. (Road map running over rollers.) 1 claim.

1,064,755. Auxiliary Wheel. Charles I. Manee, New York, N. Y. Filed June 28, 1912. Serial No. 706,341. (Auxiliary wheel with articulated spokes.) 2 claims.

1,064,765. Electric Controller for Explosive Engines and Associated Mechanisms. Charles O. Pearson, New York, N. Y. Filed Aug. 17, 1908. Serial No. 448,878. (Electric starting and control system.) 43 claims.

1,064,766. Vehicle Tire. Leroy S. Pfouts, Canton, Ohio. Filed Nov. 20, 1911. Serial No. 661,340. (Cushion tire with triangular annular air chamber.) 1 claim.

1,064,769. Preparation for Automatically Sealing Punctures in Pneumatic Tires. George Herbert Price, Queenstown, Cape Colony. Filed Aug. 14, 1911. Serial No. 643, 947. (Puncture-filling liquid.) 6 claims.

1,064,804. Steering Mechanism for Automobiles. Elbert L. Wood, Nevada, Iowa. Filed July 28, 1911. Serial No. 641,183. (Front wheels carried on separate frame pivoted to main frame and deflected bodily for steering.) 2 claims.

1,064,837. Spring Wheel. Thomas N. Jordan, Long Beach, Miss. Filed May 18, 1912. Serial No. 698,278. (Wheel with curved spring spokes.) 1 claim.

1,064,846. Accessory for the Ignition Systems of Internal Combustion Engines. Meldon H. Merrill, Boston, Mass. Filed Mey 10, 1911. Serial No. 626,215. (Spark plug switch.) 2 claims.

1,064,889. Transmission Gearing. Francois Deves, New York, N. Y. Filed July 17, 1911. Serial No. 638,958. (Individual clutch gear system.) 1 claim.

1,064,896. Spring Wheel. Clifford D. Freeman and Richard W. Cheesbrough, Bogus, Cal. Filed June 12, 1912. Serial No. 703,284. (Wheel and spring-and-plunger spokes.) 3 claims.

1,064,915. Means for Producing Ignition Sparks. August Kazenmaier, Stuttgart, Germany, assignor to The Firm of Robert Bosch, Stuttgart, Germany. Filed Jan. 17, 1913. Serial No. 742,659. (Magneto ignition system.) 2 claims.

1,064,942. Starting Device for Explosion Engines. Webester F. Traves, Cleveland, Ohio, assignor to William H. Becker, Cleveland, Ohio. Filed Feb. 2, 1911. Serial No. 606,227. (Spring starter.) 11 claims.

1,064,948. Automobile and Car Fender. George L. Wheeler, St. Louis, Mo. Filed Sept. 16, 1912. Serial No. 720,570. (Padded fender with spring backing.) 4 claims.

1,064,954. Indicator. Ander Peter Anderson, Akron, Ohio. Filed Oct. 7, 1912. Serial No. 724,473. (Float operated tank gauge.) 2 claims.

1,064,962. Internal Combustion Turbine Engine. William Carl Cooper, Perry, Mich. Filed Apr. 13, 1911. Serial No. 620,733. (Gas turbine with compression cylinders.) 3 claims.

1,064,969. Hood for Vehicles. Austin Hennessy, London, England. Filed Apr. 24, 1912. Serial No. 692,913. (Hood supported wholly from the rear section.) 3 claims.

1,064,974. Double Cage for Roller Bearings. Charles S. Lockwood, Newark, N. J., assignor to Hyatt Roller Bearing Company, Harrison, N. J., a Corporation of New Jersey. Filed Jan. 2, 1912. Serial No. 668,832. (Cage for double row of conical rollers.) 1 claim.

1,065,001. Valve Actuating Means for Internal Combustion Engines. Joseph Schleiter, Waterloo, Iowa. Filed Mar. 5, 1912. Serial No. 681,700. (Intermittent rotary motion for rotary valves.) 2 claims.

1,065,011. Sleigh Attachment for Power-Driven Vehicles. Andrew Vettel, Jr., Sandusky, Ohio. Filed May 10, 1912. Serial No. 696,483. (Track-tread device.) 12 claims.

1,065,025. Gas Engine Starter. Barnet Nixon Botts, Paso Robles, Cal., assignor of one-half to Verne Exline, Paso Robles, Cal. Filed Dec. 7, 1911. Serial No. 664,313. (Compressed air starter.) 2 claims.

1,065,064. Mud Hook. Rieman A. MacDonnell, Fernandina, Fla. Filed Sept. 17, 1912. Serial No. 720,812. (Grip for use in deep mud.) 1 claim.

1,065,067. Carburetter. John B. Naczek, Milwaukee, Wis.; Joseph Naczek, administrator of said John B. Naczek, deceased. Filed Aug. 7, 1911. Serial No. 642,625. (Carburetter with movable nozzle and fan in outlet.) 18 claims.

1,065,080. Resilient Wheel. Emil Radke, Blue Earth, Minn. Filed Dec. 16, 1911. Serial No. 666,131. (Wheel with spring spokes and sectional rim.) 1 claim.

1,065,084. Chain Mat for Wheel Tires. Charles E. Smith, Bridgeport, Conn., assignor to The Walker Tire Chain Company, Toledo, Ohio, a Corporation of Ohio. Filed Feb. 11, 1913. Serial No. 747,601. (Non-skid chains with ring treads.) 1 claim.

1,065,096. Anti-Skidding Device. Porter D. Albert, New Bethlehem, Pa. Filed Oct. 11, 1912. Serial No. 725,183. (Non-skids brought into action by wheel sliding laterally on axle.) 1 claim.

1,065,103. Lock for Automobiles. Lippman Baum and Charles Sandler, Washington, D. C. Filed June 11, 1912. Serial No. 703,050. (Steering wheel lock.) 6 claims.

1,065,139. Tire Fastening Device. James J. Kelly, Crafton, Pa. Filed Nov. 6, 1911. Serial No. 658,705. (Rim with one removable flange and holding pins.) 2 claims.

1,065,162. Airless and Punctureless Automobile Tire. Corwin E. Miller ,Peru, Ind. Filed Dec. 14, 1912. Serial No. 736,833. (Cushion tire.) 2 claims.

1,065,183. Steering Gear for Automobiles. Theodore D. Stanley, Detroit, Mich. Filed Aug. 24, 1912. Serial No. 716,818. (Screw-and-nut steering gear.) 3 claims.

1,065,189. Shifting Bow for Vehicle Tops. Charles E. Titchener, Binghamton, N. Y. Filed Dec. 27, 1911. Serial No. 668,173. (Hinge clip for top support.) 1 claim.

1,065,207. Resilient Mounting for Wheels. Henry W. Bowman, Barbourville, Ky. Filed Sept. 9, 1912. Serial No. 719,422. (Spring-cushioned hub.) 1 claim.

1,065,214. Chain Mat for Resilient Tires. Maurice A. Carter, Granville, N. Y., assignor to The Walker Tire Chain Company, Toledo, Ohio. Filed Nov. 7, 1912. Serial No. 730,004. (Non-skid chain with ring treads.) 3 claims.

1,065,271. Power Dumping Wagon. John P. Powers, Ossining, N. Y. Filed Sept. 27, 1912. Serial No. 722,601. (Truck body tilted by power.) 4 claims.

1,065,295. Road Map Holder. Thomas H. Connors, Seaforth, Minn. Filed Mrf. 28, 1912. Serial No. 686,816. (Tubular casing for map roll.) 1 claim.

1,065,327. Spark Plug Connector and Switch. Charles E. Semple, Jr., Youngstown, Ohio. Filed Apr. 27, 1911. Serial No. 623,699. (Combined switch and spark plug terminal.) 4 claims.

1,065,331. Carburetter. William J. Rubesky, Minneapolis, Minn. Filed Aug. 17, 1908. Serial No. 448,942. (Carburetter with wick device.) 19 claims.

1,065,357. Automobile. Jesse H. Hand, Ann Arbor, Mich. Filed Apr. 1, 1912. Serial No. 687,670. (Fifth-wheel steering gear.) 2 claims.

1,065,386. Spring Wheel. Frank J. Nicolet, Steubendale, Ohio Filed June 19, 1912. Serial No. 704,706. (Wheel with jointed spring spokes.) 1 claim.

1,065,391. Muffler Cut-Out. Arthur Piel, New York, N. Y. Filed Jan. 17, 1911. Serial No. 603,130. (Muffler cut-out with flap valve.) 5 claims.

1,065,410. Gas Turbine. Frank A. Voiles and Oscar M. Voiles, Chicago, Ill. Filed Aug. 14, 1911. Serial No. 643,944. (Combination of rotary and reciprocating pistons.) 10 claims.

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Manufacturers of Electric Lighting and Starting Equipment Who Use and Recommend



Storage Batteries

Adams-Bagnall Electric Co.	Cleveland, O.
Adams & Westlake Co.	Chicago, Ill.
Bailey Electric Co.	Grand Rapids, Mich.
Bijur Motor Lighting Co.	Hoboken, N. J.
Briggs Magneto Co.	Elkhart, Ind
Dayton-Dick Co.	Quincy, Ill.
Dean Electric Co.	Elyria, O.
Detroit Electric Appliance Co.	Detroit, Mich.
Diehl Mfg. Co.	Elizabethtown, N. J.
Dyneto Electric Co.	Syracuse, N. Y.
Economy Mfg. Co.	York, Pa.
Electric Auto-Lite Co.	Toledo, O.
Electro Light & Starter Co.	Indianapolis, Ind.
Emerson Electric Co.	St. Louis, Mo.
Esterline Co.	Indianapolis, Ind.
Fisher Electrical Works	Detroit, Mich.
Gray & Davis	Boston, Mass.
Hartford Suspension Co.	Jersey City, N. J.
Holtzer-Cabot Electric Co.	Brookline, Mass.
Ide Engine Co.	Springfield, Ill.
Ignition Starter Co.	Detroit, Mich.
Jones Electric Starter Co.	Chicago, Ill.
Kemco Elec. Mfg. Co.	Cleveland, O.
Leece-Neville Co.	Cleveland, O.
National Coil Co.	Lansing, Mich.
North-East Electric Co.	Rochester, N. Y.
Northwestern Mfg. Co.	Milwaukee, Wis.
Remy Electric Co.	Anderson, Ind.
Rushmore Dynamo Works	Plainfield, N. J.
Splitdorf Electric Co.	Newark, N. J.
Wagner Electric Mfg. Co.	St. Louis, Mo.
Ward Leonard Electric Co.	Bronxville, N. Y.
R. C. Wells Mfg. Co.	Fond du Lac, Wis.
Westinghouse Elec. & Mfg. Co.	East Pittsburgh, Pa.

Count Them

and if you are at all familiar with the various Electric Lighting and Starting Systems you will readily note that there are but THREE MANUFACTURERS whose names do not appear in this list.

A Total of 37 Manufacturers of Whom 34 Recommend the Use of GLBA Batteries or 91.9%

and Agents for cars not equipped with GLBA Batteries are INSISTING that their manufacturers SHALL ADOPT them instead of those which are IMITATIONS of the GLBA

This overwhelming preference for GLBA Storage Batteries is not due to price consideration, as THEY ARE NOT SOLD ON PRICE.

The actual performance, superior quality, long life, enormous manufacturing facilities, and our unequalled service organization are the features that prompt the FAR-SEEING MANUFACTURERS to pin their faith to the GLBA

When you buy a car, remember that the starting and lighting system is a vital part of the car equipment.

YOU WANT THE BEST. If you insist on a system made by any firm in the above list, you get an GLBA Battery with it—if you ACCEPT one of the other 3, remember that you ARE NOT getting a system whose elements are of the best—and ONLY from a combination of the best can be secured that perfect, harmonious operation which insures the utmost efficiency and satisfaction.

Write us for full information

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 136 W. 52nd Street. Chicago Branch: 2241 Michigan Avenue.
Detroit Branch: 1191 Woodward Avenue. San Francisco Branch: 243 Monadnock Building.
Indianapolis Branch: 438 and 439 Indiana Pythian Building.
Depots in all principal cities in the United States, Canada and Mexico.

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A Remarkable Record

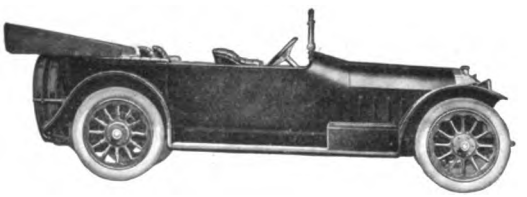
PATHFINDER

The Pathfinder Leather Stocking Model is the most talked about "six" on the market.

Before any public announcement of this car appeared we had actual car orders for one-quarter of our output. Orders received to date will take care of more than one half of our scheduled 1914 output of sixes.

Only a few of our friends knew about the Spectacular Six, but they told their friends who told their friends, and—now it looks like Pathfinder's biggest year.

The reason for the instantaneous popularity of the new Pathfinder Six is found in the "New Plan for Buying and Selling Automobiles." Get it—and read it.

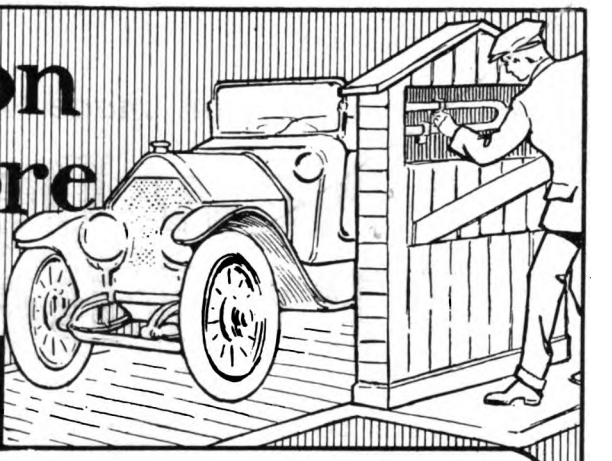


Pathfinder body designs are generally described as "Beautiful." Learn why by writing for our art catalog and "101 Reasons."

MOTOR CAR MFG. CO., 1138 Division St., INDIANAPOLIS, USA

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Put the car on the scales before you buy it!



If you want to know how much weight electrical equipment has added to the 1914 car, before you buy it---

WEIGH IT!

You're the one who will pay the tire bill, the fuel bills, the repair bills—**Weigh it!**

See that all the car's belongings are under the seats, water in the radiator and gasoline in the tank and then—**Weigh it!**

You don't have to take anyone's word for its weight—**Weigh it!**

If you want to know why the new car is sluggish, feeble on the hills, sudden death to tires and thirsty for gasoline—**Weigh it!**

Then compare the weight with a 1910 or 1911 model of the same car.

Electrical equipment adds a dead weight of 150 to 250 pounds and in addition (by actual tests) consumes 8% to 12% of the engine power.

This calls for larger engine, heavier frames, axles, springs, tires—added weight all the way through.

Either you'll find this or you'll find something worse—for if the manufacturer has not enlarged the engine and other parts to carry excess weight the result is a weak, under-powered, over-loaded car.

If You Want a Real Automobile

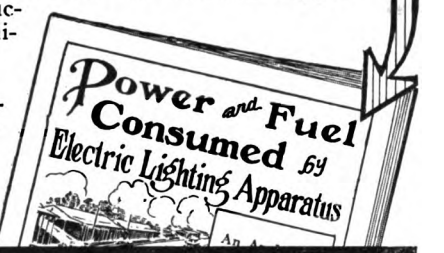
full powered, simple, easier on tires, less troublesome, less expensive in every way—see that it is Prest-O-Lited.

Even if the car was designed to carry electrical equipment, the removal of the electric apparatus and the substitution of Prest-O-Lite will make a decided reduction in the weight, stop the power loss, and increase the safety, reliability and economy.

If you want to know why—send for this book.

It shows why electric lighting costs five times more than Prest-O-Lite—how you risk the safety of yourself and family by an unreliable lighting system.

It tells why thousands of motorists are keeping their old cars and refusing to buy the new ones with electric equipment.



The Prest-O-Lite Co., Inc.

287 Speedway, Indianapolis, Ind.

(*Contributor to Lincoln Highway*)

Prest-O-Lite can be lit, dimmed and extinguished from the driver's seat. It is the natural solution of your lighting troubles.

Exchange Agencies Everywhere

USE THE COUPON

THE PREST-O-LITE CO., INC.,
287 Speedway, Indianapolis, Ind.

Please send full information on ALL lighting systems to—

.....

.....

.....

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American made for American trade

New Departure Ball Bearings

THE complete success of New Departure ball bearings in meeting the demands of the American car manufacturer for a bearing of quality, capacity, efficiency and durability, is attested by the fact that **two-thousand skilled mechanics are operating ten and a half acres of modern machinery, producing ten-thousand guaranteed bearings per day.**

Can we send you Catalog?



The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit

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We will not build a radiator in our factory that is not honestly and scientifically designed to do the work required of it. Our continued business relationship with the makers of America's best cars, year after year, offers abundant testimony of the soundness of this policy.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

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CAPACITY
GURNEY
ENDURANCE

Trials are the Order of the Day

But erring and unfortunate men in high and low estate are not the only objects of judicial investigation. So impersonal a thing as a ball bearing must be subjected to the most relentless trial in testing laboratories and out on the road to discover any hidden fault or weakness. These courts are above any suspicion of partiality. Before these courts the Gurney Ball Bearing has been repeatedly on trial. The verdict is singularly unanimous.



FIAT JUSTITIA

THE VERDICT

Steel—Uniformly good—none better.
Hardening—Uniform—None soft, none brittle.
Balls—The best obtainable.
Accuracy—Unequaled by any other, American or Foreign.
Concentricity—Unequaled by any other.
Load Capacity—Greater than any other.
Thrust Capacity—Much greater than any other.
Endurance—Greater than any other.

THE SENTENCE

Is written on an order blank.

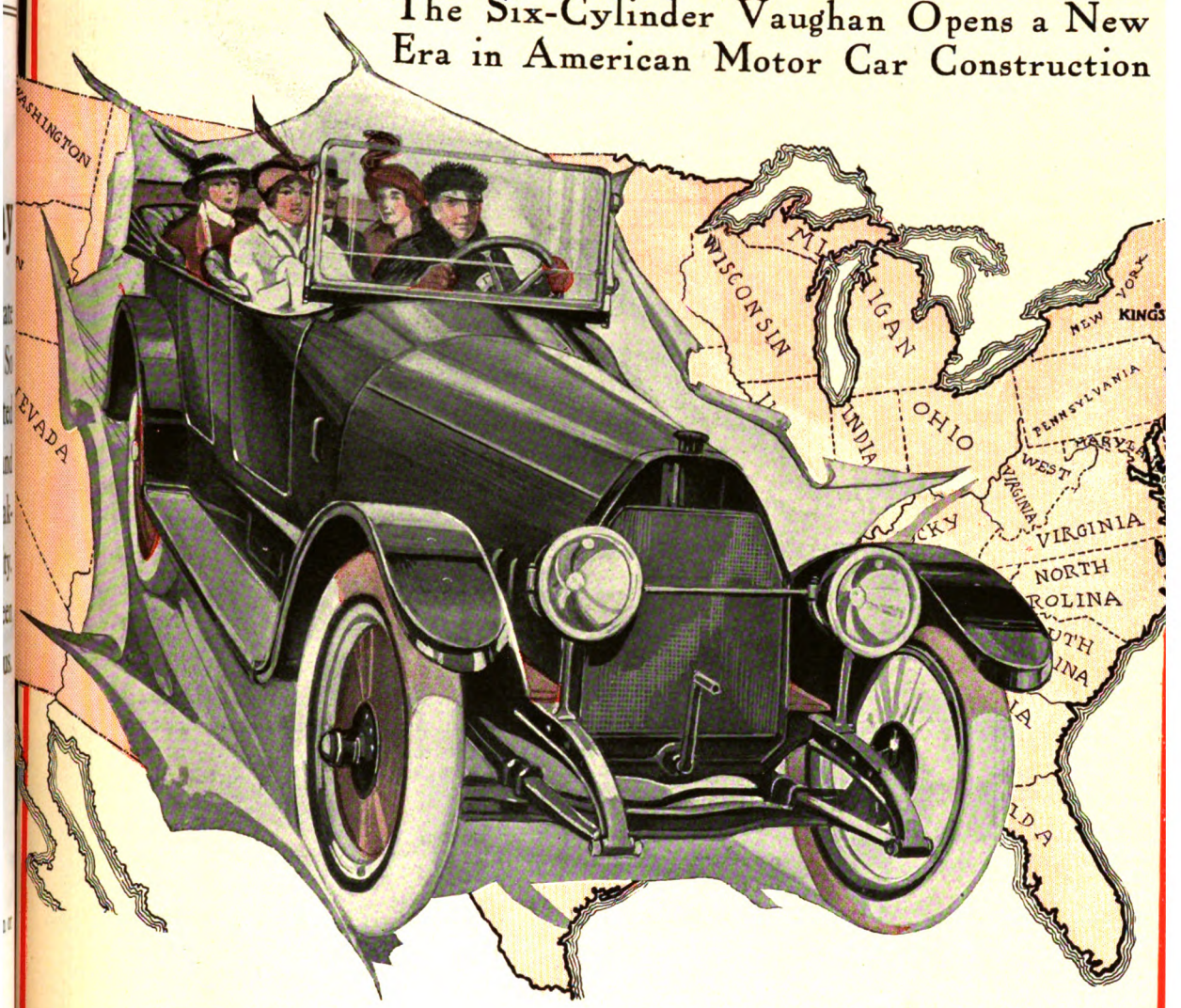
GURNEY BALL BEARING COMPANY

Jamestown, N. Y.

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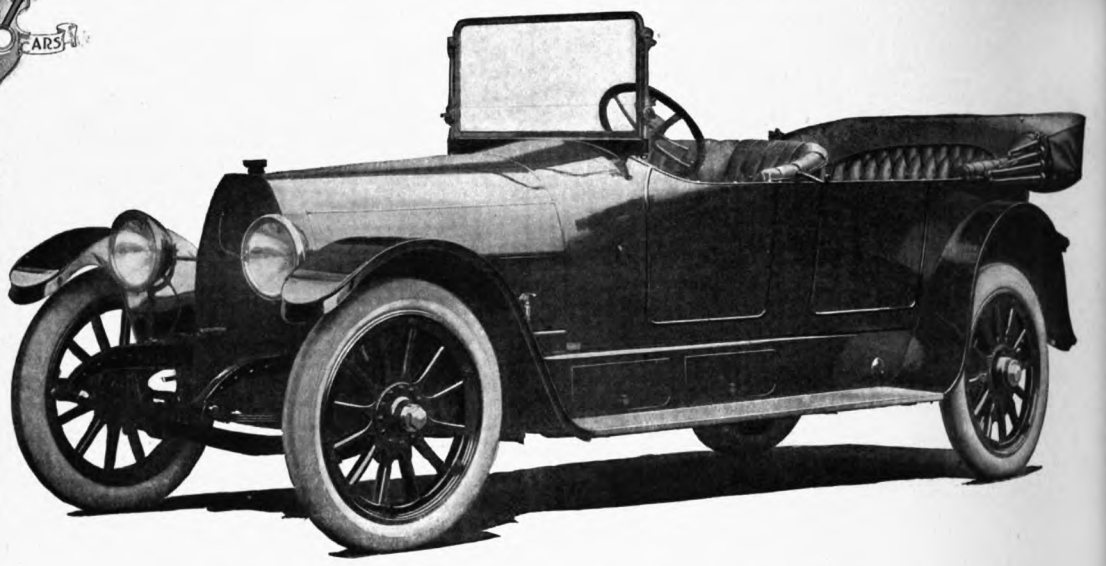
The Real Automobile Has Arrived

The Six-Cylinder Vaughan Opens a New Era in American Motor Car Construction



It was time that *one* American manufacturer built a car that measured up to the best foreign practice in construction and design. We saw the opportunity — We BUILT THE CAR.

Digitized by Google



The Six-Cylinder Vaughan is the highest development of the master builder's art.

The car is ready—today:

One week ago we printed a new kind of advertisement of a new kind of automobile in three leading journals of the Automobile Industry. We said we needed 50 progressive men who should be thoroughly representative of the front rank of American automobile distributors.

We were quite sure before the First Advertisement appeared that we would be able to market our 1914 output.

NOW we are POSITIVE of it.

It is of the utmost importance to us that the representation of this new car shall be in the right hands. Our dealers must be men who know how to sell real automobiles and have a following that know *real automobiles.*

Every city now has its group of motor-wise men, who are quickly responsive to every real advance in motor car construction. We want these men to see this car, to ride in it, to drive it *first.*

The man who drives this car on the streets of your city is going to be met with this sort of conversation at his club and in his office:

"Stunning machine I saw you in this morning, old man—that's the handsomest automobile in *this* town. It's a foreign car, isn't it?"

Digitized by Google

Introducing the REAL Automobile

The moment the first car is in your show room, go to the telephone and call Mr. Jones, Mr. Brown, and Mr. Robinson, and say to them:

"Mr. Jones, the new car that I told you about has arrived. It is all that I said it was when I first talked to you about it.

"I want you to sit back of the wheel of this car and tell me what you think about it. I want you to drive it up to your door-step and ask Mrs. Jones what she thinks about it—and we will ask her to ride in it.

"You have been looking for a car that did not look like every other four-wheeler on the block—well, it is here, Mr. Jones. When are you coming up to see it?"

Mechanical efficiency? Yes—we will give you detailed information of the construction of this car in person or by mail.

The six-cylinder VAUGHAN has the stuff in it. As a plain business proposition we had to do this first. Every man who will sell this car knows what is good and what is not good in motor car development.

We had to be right—we are right.

The mechanical development of this motor car was under the supervision of those who knew how to build to win your appreciation and approval. It has "stood up" under the most rigid tests of modern motor engineering.

We are proud of the product. Proud of the six-cylinder VAUGHAN that has a distinction, a style, a character that will stop the man and his wife who instinctively recognize the refined, the beautiful things of this world.

Digitized by Google



We have a car that is not like any other car made in America.

We want the men who will sell and the men who will drive this car to know that we are expert automobile constructors and have been making and selling automobiles for many years. We know the things that a good dealer must have to satisfy him. We know what we must do to gain his interest, arouse his enthusiasm and win his friendship. We must, through our dealer-friends, make their customers our friends. There must be faith all through—faith in our product—our guarantees—our promises.

The contract we will make with our dealer-friends will be fair in spirit—in proper provision for the future.

We could sell more cars in 1914 than we could turn out, and turn out properly—but we will not.

We could get twice as many dealers as we expect to make contracts with, and disappoint a lot of them—but we will not.

We could make claims, so extravagant, so far reaching that you would say: "Where have I heard that story before?"—but it will not be necessary to go that far.

The car is priced $2750. Higher price would mean nothing except the payment for something *that could not be put into the car.*

The car is ready—just now—today. We want to hear from the right men in certain cities. We may have heard from your town, and we may not. *You* must tell us that "you are interested."

That is all we want YOU TO SAY TODAY.

VAUGHAN CAR CO., INC.

KINGSTON, N. Y.

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Another BOSCH Victory

Los Angeles-Phoenix Road Race a 100 per cent Victory for Bosch Magnetos

1 Locomobile	Davis	Bosch
2 Marmon	Ball	Bosch
3 Buick	Nikrent	Bosch
4 Simplex	Rice	Bosch
5 Mercer	Buxton	Bosch
6 Mitchell	Greer	Bosch

85% of finishers used Bosch Plugs

THIS is a demonstration of Bosch Superiority—like others, it is sweeping, conclusive evidence of the Bosch Magneto's ability to withstand hard, continuous service without falter or miss.

In this race, across the desert sands and rugged mountains the cars were racked, jolted and jarred unmercifully, yet the Bosch Magnetos served perfect ignition—first at high, then at low speeds; short, sudden calls for quick, penetrating sparks to shoot thru highly compressed, heavy, oil laden mixtures. Carbonized plugs resulted and made ignition extremely difficult, but the Bosch Magnetos served irrespectively.

Bosch Ignition has always stood these severe tests and proved efficient, whether in the hands of a novice, a veteran, or an excited race-driver. Every Bosch Product is built to satisfy, built to uphold Bosch Reputation.

FOR 1914 BE SATISFIED SPECIFY BOSCH

Tell us Your Car, We'll Tell You What Magneto

BOSCH MAGNETO CO., 224 W. 46th St., New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

98 Service Stations---BOSCH Service in Every Corner of the U. S. and Canada

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Specify

RESILIENT

Detroit Springs

TRADE MARK

SILENT = SELF-LUBRICATING

and you'll buy fewer tires—



That is only one of many reasons why you should demand Detroit Springs on your next car.

Detroit Springs are *flexible*—not merely bars of steel. The perfectly proportioned resiliency, the exact measure of flexibility that reduces strain and wear on tires, also reduces strain and wear on car mechanism and multiplies the comfort of riding.

And Detroit Springs are as superior in strength as they are in the finer details of service. They are built for the emergency shock. This extra life-insurance costs you nothing extra when you specify Detroit Springs.

One of the three decisive tests of Detroit Springs. The apparatus shown here brings a crushing weight upon the springs—far greater than any it will ever be called upon to bear in actual use. The pressure is applied steadily until the natural bow of the spring is almost reversed. If the spring breaks or fails to come back to its original position it is rejected.

Guaranteed Two Years

This extra long guarantee tells the story of Detroit Spring materials and character of workmanship. It proves that the responsibility of your safety, your comfort, your car investment has been keenly felt, fully accepted, and Detroit Springs built accordingly. You are safe from breakage, protected against "settling" of springs, assured of maximum comfort—and not for a few months only, but for years.

The Springs Without a Squeak

—Silent because self-lubricating. This great advantage is new even to Detroit Springs, and in itself is sufficient reason for you to see that they are on the car you buy. A cavity is stamped into each leaf, and filled with a long-lived lubricant. The more the spring is in action, the more lubricant is distributed, insuring silence and smooth operation, reducing friction, prolonging the life of the spring. Look for the "lubricating cup" at end of each leaf.

FREE—"From Ore to Motor Car"—Let us send you a copy of this book—the only one published to give you first-hand factory information about Automobile Springs. There are facts in this book that every owner of a car should know. Explains how Detroit Springs insure your safety and lengthen the life of your car and tires.

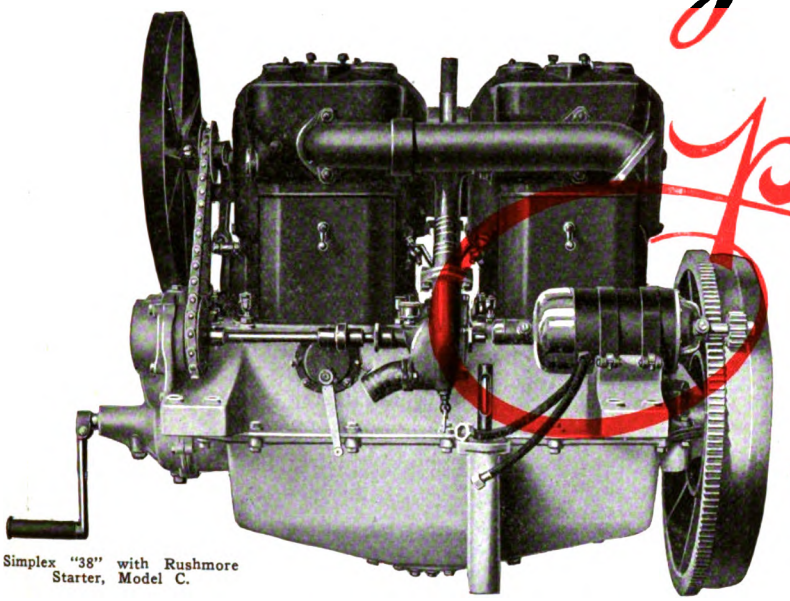
Detroit Steel Products Company, 2258 East Grand Boulevard, Detroit, Michigan

Manufacturers of Fenestra Solid Steel Windows—"The Standard of Industrial Daylighting"

Guaranteed for two years

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Only 30 pounds is the weight of the new



Simplex "38" with Rushmore Starter, Model C.

RUSHMORE STARTER MODEL C

The Model C Rushmore Starter runs normally at 1200 r.p.m. and develops its maximum of 1 1/5 h.p. at only 450 r.p.m. It is possible in a slow speed motor like this to eliminate certain electrical losses which accompany higher speeds. It is also possible to gear directly to the flywheel, thus reducing gear friction. This direct gearing, in turn, is made possible by the patented device of employing the magnetic pull of the pole pieces to shift the armature and pinion into engagement, and the counter electromotive force due to acceleration to release the same when the engine picks up its cycle.

Literature on request

The following cars use the Rushmore Starting and Lighting System:

Simplex	***Mercer***
Lancia	***Regal***
Knox	***Kline***

Rushmore Dynamo Works
Plainfield, N. J.

—yet it spins a 50-h.p. engine at 100 r.p.m., taking only 100 amperes at 5.5 volts.

The following performances are typical:

SIMPLEX "38" 4 *cylinders*, 4⅞ x 6½ *inches*.
Spinning speed 100 r.p.m., using 90 amperes at 5.6 volts.
Gear ratio 12 to 1.

This engine spun continuously 45 minutes on one charge of 120 ampere-hour battery. Rise in temperature of starter in 45 minutes, 40 degrees F.

MERCER: 4 *cylinders*, 4½ x 5 *inches*, *compression* 100 *pounds*.
Spinning speed 168 r.p.m., using 108 amperes at 5.5 volts.
Gear ratio 7.3 to 1.

This engine spun continuously at 168 r.p.m. for 45 minutes on a single charge of a 120 ampere-hour 6-volt Willard battery.

————: 6 *cylinders*, 4½ x 5½ *inches*.
Spinning speed 115 r.p.m., using 100 amperes at 5.5 volts.
Gear ratio 10 to 1.

————: 4 *cylinders*, 3 3-16 x 5⅛ *inches*.
Spinning speed 160 r.p.m., using 95 amperes at 5.6 volts.
Gear ratio 6¾ to 1.

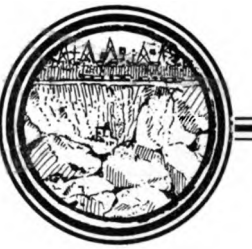
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Ambesco

is Manufactured (not Assembled-) entirely within our own factory walls



AMERICAN ASBESTOS Co.
NORRISTOWN PENNA.



FROM MINE

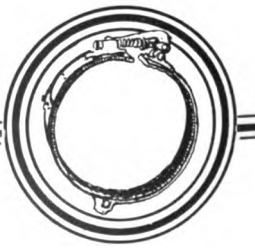
THE first great advantage we gain by manufacturing Ambesco—every detail from the crude asbestos at the mine to the finished brake linings—in our own factory, is that we eliminate every vestige of middleman profit. Woven asbestos products have been our specialty for years and we are, probably, better prepared to make superior woven asbestos specialties for less money than any other concern.

By eliminating middlemen profits, we save manufacturing costs.

With our equipment for handling every detail of brake lining manufacture we are able to govern the uniformity of Ambesco. For instance, yarn from one mill will vary from that of another. Concerns who buy from yarn or tape jobbers, as most others do, never know how many different mills spun the yarn that goes into their brake linings. Consequently the uniformity of their products cannot compare with Ambesco.

All this would be a small matter were it not for the fact that brake linings must have uniform thickness in order to perform their functions and stand up for even a reasonable length of time. A brake lining of varying thickness of strands wears unevenly, works inefficiently and cannot give the satisfaction Ambesco does at a lower relative price.

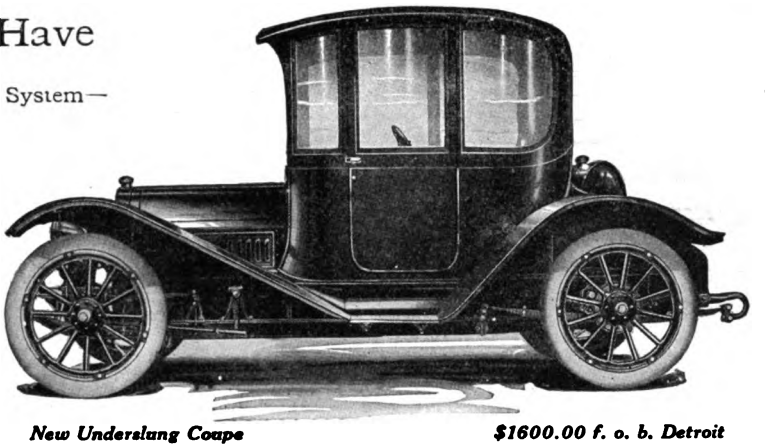
Write us for particulars and be sure to ask about our plan with relation to dealers and repairmen.



TO BRAKE

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All Models Have
Rushmore Electric
Starting and Lighting System—
Left Side Drive—
Center Control—
Complete
Equipment



3
Underslung Models

1
Overhung Model

Popular Cars

Popular Prices!

New Underslung Coupe *$1600.00 f. o. b. Detroit*

Mr. Dealer—The Regal Line Sells the Year Round—Here's Why!

The Regal line of cars enables Regal dealers to sell cars 52 weeks in the year. There are no slow months during the winter. The Regal coupe completes the "all year round" line. The dealer taking the Regal line starts right in on a busy season — doesn't have to wait until spring.

Regal Underslungs Have MORE Selling Points Than Any Other Cars in Their Class

¶ We offer a variety of four models—an Underslung Touring car—an Underslung Roadster—an Underslung Coupe and an Overhung Touring car.

¶ All Regal cars are listed with *complete* equipment and with Rushmore Electric Starter and Lighter—Left Side Drive and Center Control.

¶ Regal cars are popular cars and sell at Popular Prices—(Half the battle).

¶ Regal cars are the only Popular Priced cars on the market offering *Underslung Construction* and the resultant advantages.

¶ We are making deliveries—not disappointing our dealers. Are expanding our plant in pace with the growing demand. We now cover 9½ acres.

¶ We invite you to investigate our financial status. A contract with a weak manufacturer might prove disastrous.

¶ Our export business is one of the greatest in the American Motor Car Industry.

¶ Don't forget that the first impression goes a mighty long way. The low, rakish beauty of the Regal wins it instant favor.

¶ Our co-operation is substantial and you find in us an organization that *can* and *will* back up its product—and its representatives.

¶ The commission is liberal and our dealers contract is RIGHT.

¶ If you are interested in the selling of motor cars it is decidedly to your interest to write or wire us *at once*. Should you be fortunate enough to be in open territory, you have an exceptional business opportunity before you. We have much more to tell you—write us *today*.

The New Regal Underslung Coupe

certainly sets a new standard of motor car value. It is of Underslung construction which makes possible its extremely graceful and winning lines. The interior is richly finished in buffed leather, blue broadcloth and nickel trimmings. Has extra folding seat for third passenger. Electric starter and lighter, left side drive and center control, dome light, dimming attachment for headlights and complete equipment are included. **The other three models are—**

Model "T"

Underslung 5-passenger touring car. The famous "Safest" car and the most popular of the popular priced cars. This is the car that makes your customer a *permanent* customer. Its specifications are interesting—get them. Price, **$1125**

Model "N"

Underslung Roadster. The "classiest" car at *any price!* It has the same chassis as model "T" and the same low, rakish lines. The ideal car for the business man, and has the stamina for endless service. It wins friends wherever it goes. Price, **$1125**

Model "C"

Overhung 5-passenger car. This car is *different*. The springs are hung *below* the axles, thus lowering the frame sufficiently to obtain a degree of safety found in no other overhung car. It also permits of the economical straight line drive. Price, **$1350**

109

REGAL MOTOR CAR CO., 263 Piquette Ave., Detroit, Mich.

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What a Well Organized Delivery Car Department Means to Every Automobile Dealer

IF you are a progressive and successful dealer, you are interested in this question:

"Is it good business not to have a well organized Delivery Car Department?"

We believe we can show you that it is **not** good business.

You know the pleasure car business. You know that it's "streaky." You know that it is heavy today and light tomorrow, and that your overhead is as sure as death and taxes.

Some dealers—the successful and progressive dealers—have realized that it is not good business judgment to invest all their capital—or most of their capital—in garage, service, building, show rooms and salaried sales-force for the sale of pleasure cars exclusively.

These dealers have found a way to equalize the fat months and the lean, to carry the overhead until it carries itself; in a word, to change their business from a fickle, erratic trade, fluctuating with the seasons, to a steady twelve-months business.

These dealers have found and installed and developed the profitable delivery car department.

To them and to you—if you are among such progressive and successful dealers—The Commerce Motor Car Company has much to say.

In the first place, you must distinguish clearly between delivery cars built on pleasure car chassis (which have been unhappy and inevitable failures, and the Commerce Car, which is designed and constructed as a "fool-proof," efficient delivery car—and nothing else.

In the second place, you must separate your pleasure car selling force and your delivery car selling force. You must organize and operate them separately.

That done, you are ready for the extraordinary opportunity the Commerce Car offers you.

The Commerce Car is three years old—three years of service-giving, reputation-building and hard work. We have gone slowly—because we wanted to be sure and we wanted our Commerce owners and Commerce dealers **to be sure.**

You can sell the Commerce Car—with enormous success—if you sell it to business men as cash registers and adding machines are sold to business men—and send out diligent, intelligent, methodical and rational men to sell it.

You can confirm all we say of the Commerce Car by asking Commerce Car owners themselves. We will give you names and addresses and detailed reports.

If you are in the automobile business for steady, consistent growth and permanent, legitimate profits;

If you will organize a delivery car department on the right basis and maintain an alert delivery car sales-force;

If you will contract with us and work with us and build with us in the right spirit:

The Commerce Car will give you a twelve-months profitable business and a twelve-months success.

Write or wire for details. Or, better yet, come to Detroit, see the materials we are putting into Commerce Cars, and sense the spirit of the whole organization.

The Commerce Motor Car Company

Administration Dept., 625-630 Penobscot Bldg., Detroit, Mich.



Specifications:

1,000-pound capacity, **25 per cent. overload,** guaranteed.

Equipment, including **electric horn, complete.**

32 x 3½ Goodyear pneumatic tire, or

34 x 2½ Goodyear Motz truck tire.

Express, full panel, or canopy top.

Clear floor space—
64 inches long;
42 inches wide;
52½ inches high.

Gear ratio—
6 to 1 on high;
20 to 1 on low.

Friction drive.

Wheelbase—102 in.

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Our Liberal One Year Guarantee

Stewart-Warner

We will repair or replace absolutely free of charge at our factory, branches or at any of our authorized service stations any Stewart Speedometer or Warner Auto-Meter or part that proves defective in material or workmanship within one year from date of sale to car buyer, provided transportation charges have been prepaid. This guarantee does not cover fibre pinions.

THE above guarantee is not only the ***most liberal*** speedometer guarantee ever made, but it is subject to the ***most liberal interpretation.***

In effect it covers and guarantees for one full year any Warner Auto-Meter or Stewart Speedometer from the date they go into use; that is to say, from the date any car is delivered to the retail buyer, and ***not*** from the date the instrument leaves our factory. There is a big difference.

According to terms of our guarantee if there is a defective part to be replaced you do ***not*** have to return the speedometer to the factory, as is the case with other speedometer manufacturers. Just get in touch with our nearest branch or service station. We now have fifteen branches and sixty service stations; before long we will have one hundred and fifty service stations.

Remember, ***in no instance,*** do we try to narrowly interpret this guarantee. We take the manufacturer's word, the dealer's word, or the customer's word.

This is the fairest and squarest speedometer guarantee that has ever been written.

This guarantee is backed by one of the largest organizations in the automobile business. It is also backed by the largest chain of speedometer branches, and speedometer service stations in the world.

Stewart-Warner Speedometer Corporation
Chicago, U. S. A.

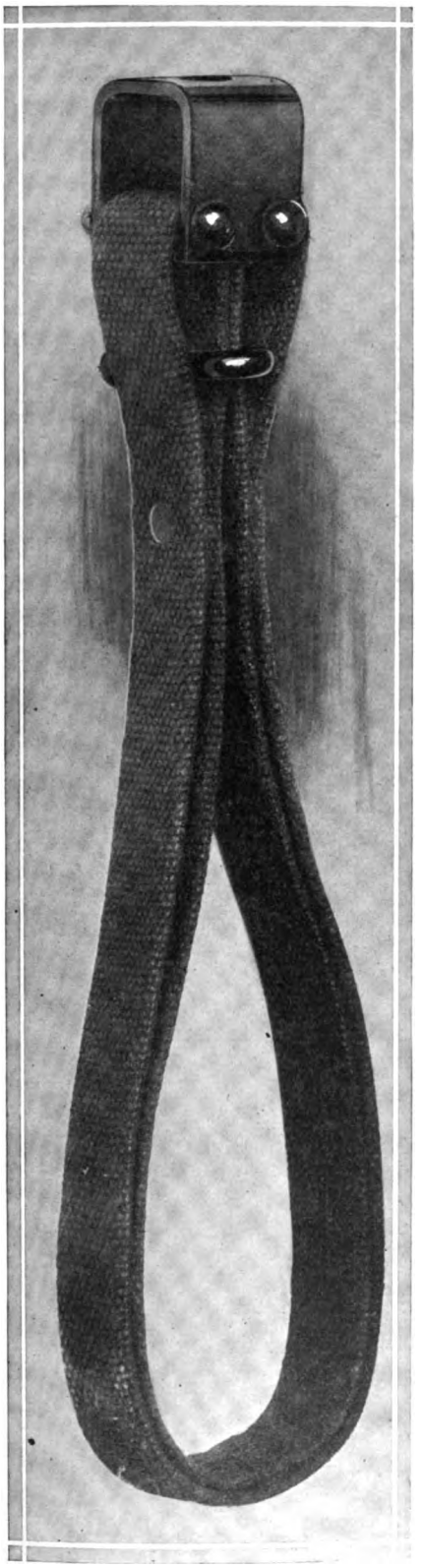
BRANCHES Atlanta Boston Buffalo Chicago Cleveland Detroit Indianapolis Kansas City Los Angeles Minneapolis New York Philadelphia Pittsburgh San Francisco St. Louis

Also sixty service stations.

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The Gilmer Rebound Strap

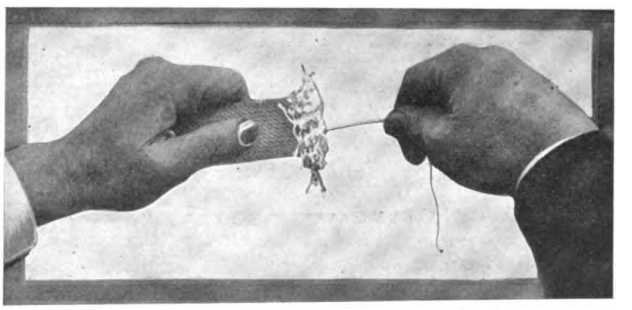
Our method of weaving selected material into Gilmer Rebound Straps, the water and weather-proofing they are treated with against decay, and the patented process of splicing the ends so as to make the weave continuous even where the joint occurs, gives them the strength to perform their functions better than any other type.

The sizes recommended for various cars have strength far in excess of the capacity required even by the sturdiest rear axle construction.

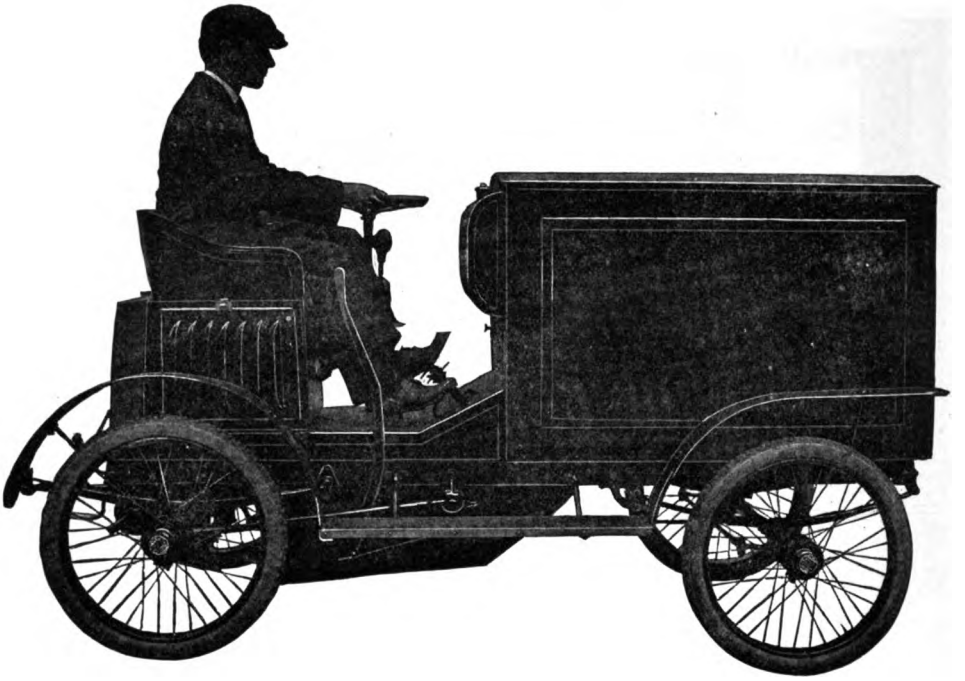
L. H. Gilmer Co.

52 N. Seventh St., Philadelphia, Pa.

Continuous Weave—The Secret of Strength



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WATER COOLED

An axiom, an accepted principle of standard automobile design, years of experience having proven the air-cooled motor unsuited for practical usage, useless upon larger than motorcycle engines.

THE MOTOKART

is the only smaller than standard commercial car built in America equipped with a real automobile motor, **4 cycle, water cooled.** This is only one of its many sound, practical **selling features,** others are:

FRICTION DRIVE, no gears to strip.

COMPACT DIMENSIONS, facilitating handling in crowded streets.

RIGID CONSTRUCTION, insuring structural safety under the most severe usage.

LARGE BOX AREA, greater than upon any other similar car.

SEMI-ELLIPTIC SPRINGS, assuring ease of carriage upon the roughest roads.

WIRE WHEELS, equipped with 26 x 2½ Non Skid Tires.

PRICE, within the reach of every retailer in the United States.

$400.00

County agents wanted in all unoccupied territory

TARRYTOWN MOTOR CAR CO., Inc.

Factory: Tarrytown, N. Y. **Office: 1790 Broadway, N. Y. City**

Address all correspondence to New York Office

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FISK Tubes

FEW DEALERS need to be told anything about the quality of Fisk Tubes. They are famous in the trade as **the pure gum tubes** that can be carried in stock for a long time with no sign of deterioration.

They are pure Para rubber, vulcanized ***right*** and spliced ***right.*** There you have the whole secret as to why the same tube is often used year after year in practically continuous service.

No argument is needed to prove the superiority of a pure gum tube over a compounded one. Why not sell Fisk Tubes and give your customers the benefit of your knowledge and experience?

Write Department 23 for Fisk Dealer Proposition

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 40 CITIES

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones ins't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, ***always***. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street NEW YORK CITY



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 408 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

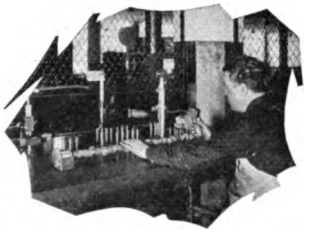
FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co. (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

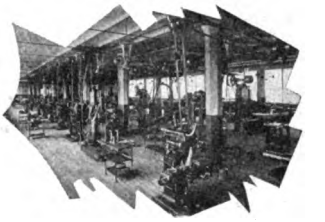
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A well lighted factory.



Testing with Scleroscope for proper hardness.



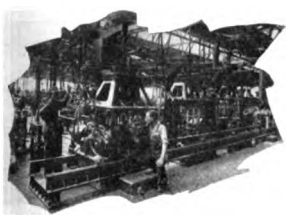
The tool room of the Detroit plant.



Thirty-seven crank shaft dimensions which must be verified.



Special Boring Mill which operates ten cutters.



Drilling ninety-five holes in seven minutes.



Balancing a crank shaft on final test.



The Room of Silence in testing department.

"For Heaven's sake, give me cars," hundreds of dealers will wire frantically.

"We cannot get motors," many manufacturers will be forced to reply.

Continental Motors

The early months of next year will see a time of rush and turmoil in the automobile industry. Makers and dealers are holding back to an unusual degree this fall; and when demands come crowding—say next March—every manufacturer will press with might and main for delivery of parts, as his dealers begin to pour in their specifications.

There will be a shortage in some quarters. There must be.

But not of motors (the most important unit) for any car Continental equipped. Every firm that uses Continental co-operation in the building of its motors, knows to a certainty that its specifications will be carried through on the dot.

Every dealer who handles a car or truck Continental equipped, knows to a certainty that he will not be hampered in his sales campaign because the factory cannot get motors.

Two immense factories, ample resources and an organization intact year after year—these are the safeguards that insure Continental deliveries.

A reputation for service, universal good will, and a motor that is America's Standard—these are the safeguards that insure your sales.

Continental Motor Mfg. Co.

Detroit, Mich.

Factories: Detroit and Muskegon

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INVADER OIL



WHICH is the best automobile? Which is the best tire?

¶ There is no way of finding out except by trying them all and then exercising your individual preference or caprice.

¶ Which is the best oil?

¶ Neither preference nor caprice enters into this. The best oil is simply the one whose chemical tests show it to be best suited to the mechanical conditions under which it is required to perform its work. Inasmuch as every motor operates within certain inflexible mechanical limits, and inasmuch as every oil possesses certain inflexible chemical tests, the selection of the best oil is merely a question of selecting the one with the best tests. Nothing more.

¶ It is a well-known scientific fact, for instance, that carbon in a motor oil is objectionable, and that the oil with the least carbon will (other things being equal) be the best.

MOTOR WORLD

November 20, 1913

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¶ *It is an equally well-known scientific fact that t e amount of carbon in an oil is proportionate to the weight or "gravity" of the oil.* The lighter the gravity the less carbon the oil will contain. Even those who are only superficially familiar with these things know that gasoline with a light gravity contains less carbon than gasoline with a heavy gravity.

¶ It is not difficult to find out which of any two oils have the lightest gravity and contains the least carbon. Simply take two samples of oil in glass bottles (Invader oil and any other) and pour the other oil into Invader Oil. The other oil will sink to the bottom.

¶ Avoid the oil which sinks to the bottom---it has the most carbon, and carbon is the thing that causes trouble.

¶ Of the many oils being called to your attention, Invader Oil has the lightest gravity. It contains the least carbon. It is the best because its tests are better.

Territorial agents are in a position to fill orders as promptly and at the same prices as the main office or any branch of the Invader Oil Company

FACTORIES
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON.....512 Kenois Bldg.
PHILADELPHIA.....113 Arch St.

INVADER OIL COMPANY, Inc.

Lessees of Charles F. Kellom & Co.

MAIN OFFICE: 81 BROAD STREET, NEW YORK

New York City Branch: 1906 Broadway

TERRITORIAL AGENTS
Los Angeles, Cal.....W. D. Newerf Rubber Co.
San Francisco, Cal.....W. D. Newerf Rubber Co.
Tacoma, Wash.....Union Motor Car Co.
Omaha, Neb.....Lininger Implement Co.
Detroit, Mich.....Boyer-Campbell Co.
St. Louis, Mo.....Beck & Corbitt Iron Co.
Chicago, Ill.....Motor Car Supply Co.
Salina, Kan.....Lee Hardware Co.
Kansas City, Mo., American Lubricating & Supply Co.
Portland, Me.....James Bailey Company

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Rockefeller Finds His Own Gasoline Faulty

True to the old saying that no doctor likes to take his own medicine, William G. Rockefeller is finding fault with the gasoline turned out by the Standard Oil Company

According to the people of Greenwich, Conn., Mr. Rockefeller has had a man testing an invention ... gasoline on his motor ... also discovered th... his hom... er of the...

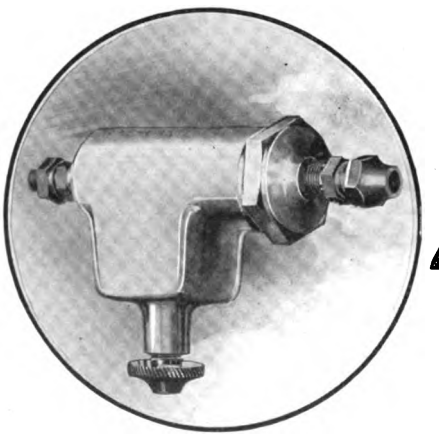
FROM N.Y. AMERICAN NOV. 12, 1913

Commercial Gasolene generally is not very "high test." Even if it were, such impurities as dirt, dust, grit, sediment, water etc., would cause as much carburetor trouble as ever. Carburetors will vaporize gasolene readily until the impurities of fuel cause trouble.

The Ellis Gasolene Purifier

filters out every impurity however small and keeps them away from the carburetor. It even catches water, which gathers in fuel tanks by condensation and mixes with the gasolene. By removing the causes of carburetor trouble the trouble itself must stop.

Every dealer in the country should have a Purifier on his demonstrator to guard against trouble. All your customers should have their cars so equipped. Write for our discounts to dealers. List price of the Purifier, $3.50.



THE NATIONAL SALES COMPANY

45 Milk Street — *Sole Manufacturers* — Boston, Mass.

Correspondence with dealers and garagemen solicited

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Packard, Peerless, Winton, Stevens-Duryea, Lozier, Stearns, Palmer-Singer, Havers, Franklin, Chalmers

and the makers of many other high grade cars use and highly endorse the

Four Cylinder KELLOGG Tire Pump

Because the makers of these cars have used the Kellogg for four years and found it to give consistent and satisfactory service;

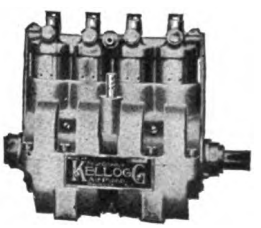
Because they have found the Kellogg the only power air pump good enough to become a part of their equipment;

Because the Kellogg's four cylinders do not strain the motor or gears;

Because the Kellogg is quick in action, reliable at all times, and never permits oil to enter tires;

Because the Kellogg is the best power air pump ever placed on the market.

Manufacturers, Dealers, Car Owners



Attachments are supplied for installing the Kellogg in practically any model of any car now in use or announced for 1914.

Write for our book—"Air On Tap." Learn what the Kellogg will do for you—how it will make money for you.

Kellogg Manufacturing Company

Main and Circle Sts., Rochester, N. Y.

NEW YORK 1744 Broadway SAN FRANCISCO 444 Market St. CHICAGO 1112 So. Michigan Ave.

"NOARK" FUSES

For the Protection of Automobile Lighting Systems



"Noark" Fuses offer protection to the various circuits of an automobile lighting system. They protect the lamps, wiring, storage battery, etc., from damage due to excess currents.

"Noark" Automobile Fuses are made with the same care and accuracy as are the larger capacities, recognized for years as the acme of perfection by Street Railway and Central Station Lighting Companies throughout the country.

As "Noark" Fuses always operate without arc or flash, they are especially desirable for the protection of Automobile Lighting Circuits where the emission of flame might possibly ignite gasoline vapors.

With "Noark" Automobile Fuses each lamp or circuit can be individually protected, as "Noark" Fuse Blocks or insulated bases are furnished for one, two, three or more fuses as conditions require.

Write nearest Branch for booklet.

H. W. JOHNS-MANVILLE CO.

Albany, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Syracuse

1995

MOTOPHONE

The Hand Operated Horn



$12

NO Adjustments Battery Troubles **NO Electrical Wiring Battery Expense**

Saves Its Initial Cost in Four Months

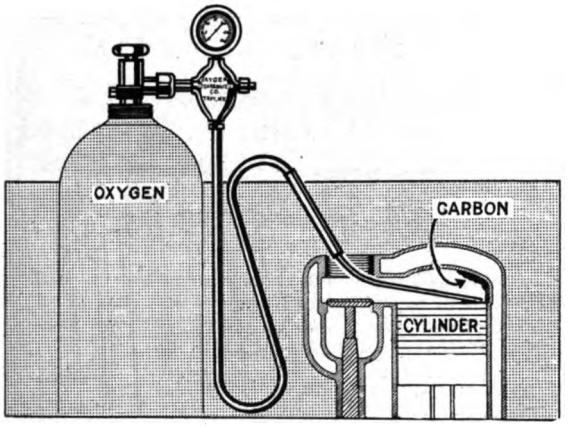
The Motophone has taken the place of the Motor Horn just as the motor horn took the place of the Bulb Horn.
Today Motophone stands head and shoulders above all other Warning Signals.

Manufactured and Guaranteed by

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place Brooklyn, N. Y.

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A Perfect

Carbon Remover for $10

NO need to pay more than this for A FIRST-CLASS CARBON REMOVER. Our outfit COMPLETELY removes every particle of carbon—from EVERY PART of the cylinders. Does it in less than one-quarter of an hour for each cylinder. As a money-maker for garage owners this outfit HAS NO EQUAL. It can pay for itself in a few days—after that, all profit. It is also a cheap means for motor truck and large private owners of keeping up the efficiency of their cars.

THE PRICE IS $10.00. This price is very low but—you get a carbon remover that does the work just as well as any other on the market! Every outfit is

Completely Guaranteed

You take no chances—we stand back of every one we sell.

We make this low price as we sell for cash only and do not carry accounts. Our money is not tied up and we share this benefit with you by taking off one-third of the regular selling price. This is a regular $15.00 carbon remover but we give you $5.00 on every one we sell. No other maker can afford to give as good a carbon remover at such a low figure.

Price only $10.00. Express Prepaid
Sent, cash with order, or C. O. D.

Oxygen Decarbonizer Company

301 River St. **Troy, N. Y.**

Send for Information



Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by
DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

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LEWIS VALVES Toledo

Ask Lewis About Valves

There is one way to do a thing better—that is to specialize on it. Lewis specializes on valves—builds nothing else—and crowds into them 38 years of experience in mechanical engineering.

Lewis Valves are used on America's best motor car engines. A list of them would be a revelation.

For "Proof of the pudding" suppose you write Lewis and find out some of the users. Better still, send your blue-prints and get prices, terms and delivery dates.

Lewis Electric Welding & Mfg. Co.
TOLEDO, OHIO

SPLITDORF

"Ford Special" Plugs

are a distinct asset to every Ford owner in that they insure against plug trouble. SPLITDORF PLUGS cost more than many makes of plugs on the market, but they are WORTH MORE and are really the cheapest in the long run.
The highest priced automobile as well as the most popular priced car must have the BEST PLUGS to get the BEST MOTOR EFFICIENCY, and SPLITDORF "COMMON SENSE" PLUGS have always been the standard for effective results.

SPLITDORF ELECTRICAL COMPANY

Atlanta, 10-12 E. Harris St.
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Chicago, 64-72 E. 14th St.
Detroit, 972 Woodward Ave.
Kansas City, 1823 Grand Ave.
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Newark, 290 Halsey St.
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Philadelphia, 210-12 N. 13th St.
San Francisco, 1028 Geary St.
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COX OXYGEN CARBON CLEANER



Cold Weather Increases Carbon Deposits!

Winter Driving Facilitated

Cold weather calls for thin engine oils. Thin oils frequently cause imperfect or over-lubrication—and it is over-lubrication with incomplete combustion, that produces carbon deposits in cylinders.

Carbon deposits cause a lot of trouble which is hard to trace. You can rarely tell, without dismantling your engine, when it is carbon that is responsible for engine faults. Thus it is decidedly important that cylinders should be cleaned of carbon at regular intervals—to assure maximum of efficiency with minimum of trouble.

And the most ***complete*** and ***thorough*** while ***least expensive*** method for doing this is by use of a

COX OXYGEN CARBON REMOVER

No taking down engine! No half-finished scraping of cylinders and pistons! No tying up the car for a day or more!

The work is done quickly—within from 6 to 10 minutes per cylinder. It is done ***completely.*** The oxygen removes the carbon to the smallest detail and from every nook and corner—***even to the pores of the metal.***

Taxicab, Motor Truck and Large Private Owners will find this a means of not only saving money but also of easily and constantly keeping the cylinders of their cars in excellent condition. For them, one Cox Oxygen Carbon Remover will pay for itself many times over.

GARAGE OWNERS can make it pay a handsome dividend—while doing the work for their customers in much less time and with far better results. Owners can afford and will have you clean their engine cylinders frequently when they know it costs little, takes only a short time and will do the work ***right. The Cox Oxygen Carbon Remover has paid for itself twice over in one week---and can do the same for you.***

Send for full information

Outfit complete (without tank) only $25.00.

COX BRASS M'F'G CO.
ALBANY, N. Y.

1777 Broadway
New York City

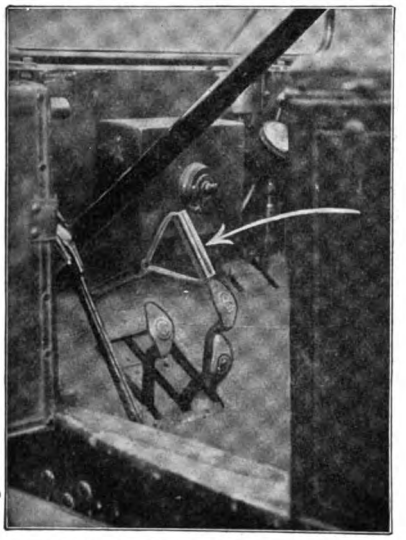
3345 Michigan Avenue
Chicago, Ill.

870 Woodward Avenue
Detroit, Mich.

COX BRASS MFG. CO., Albany, N. Y.
Gentlemen: Please send me full information about the Cox Oxygen Carbon Cleaner.
Name.....
Address.....
City.....
State.....
M. W. 10.3

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STOP!---SAVE MONEY



$9.00---ORDER TODAY---$9.00

Universal Manufacturing Co.
Racine, Wisconsin

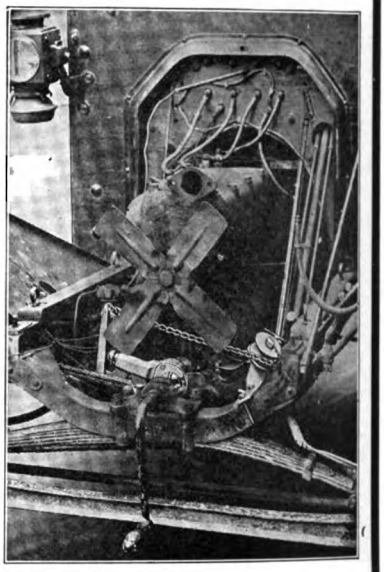
$9.00--FORD ENGINE STARTER--$9.00

"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.
DIRECT ON RECEIPT OF PRICE.



Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday—$2.00 a Year

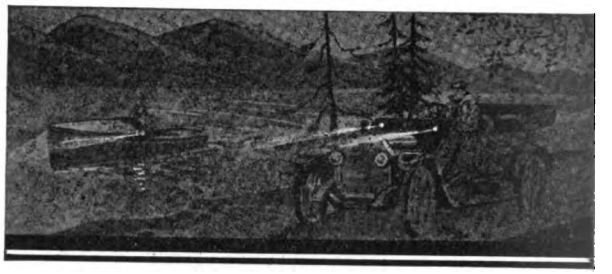
This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of
Cleveland Automobile Club.
Touring
Information



An Electric Lighting System at Moderate Cost

Throw away your old-fashioned oil lamps. You can now light your car by electricity—**economically.** No need to install a dynamo or storage battery. Simply equip it with a set of.

JM Mobilite Lamps

These lamps can be operated on dry batteries for one-third as much as standard equipment. They give a light of remarkable brilliance. Used for dash lights, tail lights and for illuminating speedometer and interior of car. Also for motor boats, camps, etc.

Made of vulcanized rubber fitted with a special Tungsten bulb mounted between a powerful lens and reflector. Easily and quickly installed.

Price, $3.00 each. Shipped prepaid from our nearest branch if not at your dealer's.

Write nearest Branch for Booklet

H. W. JOHNS-MANVILLE CO.

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Baltimore	Cleveland	Los Angeles	New York	Seattle
Boston	Dallas	Louisville	Omaha	St. Louis
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Look to your Tires

YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



For Sale by Jobbers, Dealers, Garages or

The Twitchell Gauge Company

1202 Michigan Avenue CHICAGO



The Best Insurance Against a Worn-out Car.

Dixon's Graphite Grease No. 677

for

Transmissions and Differentials

Made in JERSEY CITY, N. J. by the

Joseph Dixon Crucible Company

Established 1827

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OhiO

OhiO 4-50 Price $1750

The OhiO Line for 1914 is the strongest you can get. 35 and 50 Horsepower "Fours"—60 and 80 Horsepower "Sixes." The sturdy construction and superb performance of each car in the OhiO Line are unequalled in any American car. At OhiO prices, no better foundation for a successful sales agency can be found.



Electric self-cranking and lighting, Full Floating Rear Axle, Left Drive and Centre Control, Multiple Disc Clutch, Warner Speedometer, Mohair Top, Rain Vision Windshield, Demountable Rims (one extra), Metal Bodies, 10-in. Upholstery, full equipment of tools, etc.

4-35 5 Passenger.....$1275
4-50 5 Passenger.....$1750
6-60 5 Passenger.....$1985
6-80 7 Passenger.....$2485

The Crescent Motor Co., Cincinnati, Ohio.

Cooperative Dealer Agreement Most Liberal Ever Offered

NoRisko
TRADE MARK
Steering Gear & Ignition Lock

INVESTIGATE THE NORISKO

before your customer's car is stolen. Every motor car owner needs constant and complete protection against the thief and the joy-rider. This is afforded only by the

NoRisko
TRADE MARK



Patents Pending

Price $7.75
Single Type (Steering Gear Only) Price $6.00
The only device made that actually locks the car.

DEALERS: Do you realize that every motorist that enters your place is a probable NORISKO purchaser? Write for full information concerning our "no-risk" plan for the trade.

C. J. ROGERS MANUFACTURING COMPANY
701 Abbott Building, Corner Broad and Race Streets, Philadelphia
Branch Distributors, Auto Specialty Sales Co., U. S. Rubber Bldg., 58th and Broadway, New York.



Swinehart
Non-Skid Tires

The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
AKRON, OHIO

B
TRADE MARK

The complete manufacturing facilities and modern equipment of the

Billings & Spencer

drop-shops are such as to insure the prompt meeting of orders with automobile forgings of standard quality.

A few of the many B trademarked products:

Automobile drop-forgings
Stock and special forgings
Steering connections
Drop hammer equipment
Automobile tools and tool kits
All types of machinists' tools, etc.

Send blueprints for estimates. Prompt shipment assured.

Write for Catalog

The Billings & Spencer Co.
HARTFORD, CONN.

Six Cylinder 65 H. P. Equipped with Vulcan Electric Gear Shift.

Four Cylinder 40 H. P. Equipped with Vulcan Electric Gear Shift.

HAYNES

Our advertising campaign will send a buyer into your showroom more than half convinced that he should own a Haynes; the sale, however, results only from a successful demonstration; it is our firm belief that, as a Haynes dealer, you possess more than a sufficient number of convincing arguments to make every demonstration result in a quick and profitable sale.

May we tell you why we believe this?

THE HAYNES AUTOMOBILE CO., 1 Main Street, Kokomo, Ind.

THE circulation of the Motor World is a guaranteed one, sworn to by an affidavit, which will be sent in detail to any one upon request

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Send Us Your Inquiries When in the Market for

SHEET METAL STAMPINGS

Estimates Cheerfully Furnished

THE BOSSERT COMPANY
Utica, N. Y.

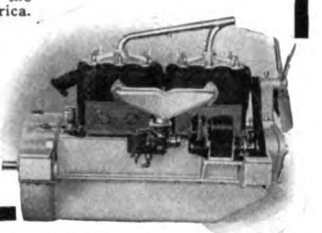
No lighting system so reliable and so perfected as the
APLCO ELECTRIC LIGHTING SYSTEM
First installed in 1907; developed by real tests to its present efficiency.
THE APPLE ELECTRIC CO., 64 Canal Street, Dayton, Ohio

Wisconsin Motors
CONSISTENT

ROAD CHAMPION OF AMERICA

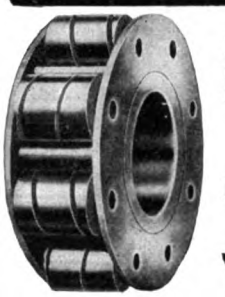
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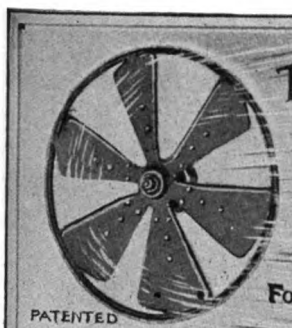
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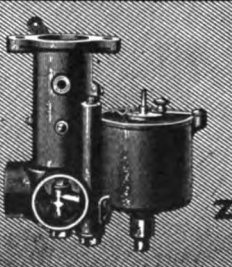
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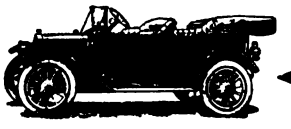
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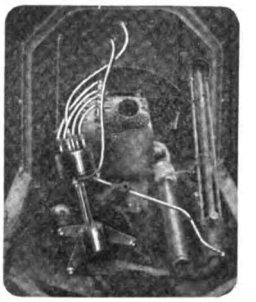
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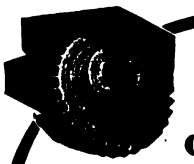
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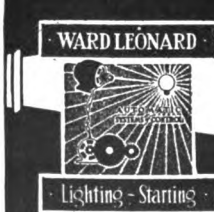
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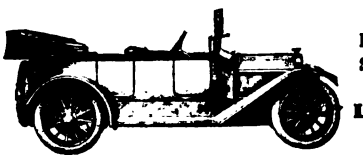
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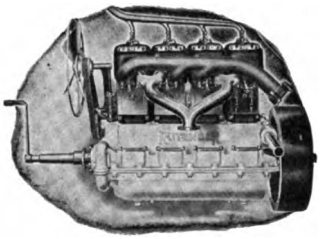
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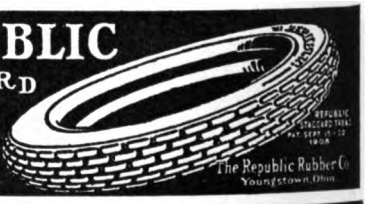
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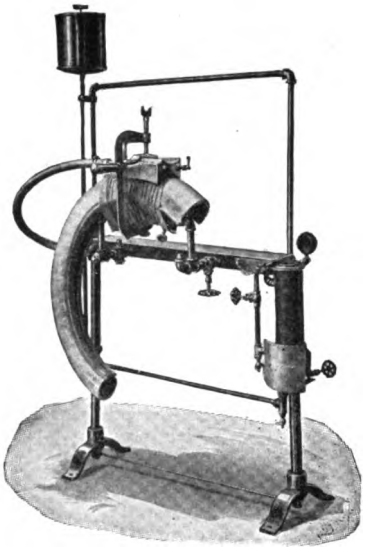
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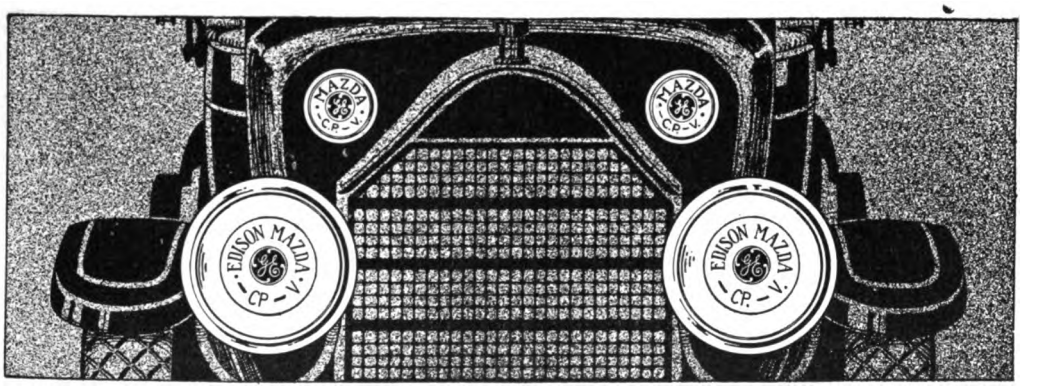
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Owners or dealers; any state, county or city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebakers, Overlands, etc.
MOTOR LIST CO. OF AMERICA
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WANTED—Exclusive agency for Germany for a low priced automobile tire. ERNST DOMASCH & CO., Auto-Material-Handlung, Leipzig, Germany, Fleischerplatz 1 b.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For brass, nickel or iron. Bakes to a high gloss finish that will not crack, chip or peel. Solid covering one coat, without a primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—Machine shop and garage; will invoice about $3,000; no opposition; a money maker. The Ford agency can be had for the county. CITY GARAGE AND MACHINE SHOP, Buffalo, Okla.

U. S. A. Patent Rights for sale of the "Simplex Steel Motor Piston," also the Duplex Piston Ring, largely in British, U. S. A. and foreign cars. British and French patents already disposed of. Apply. THE OXYGEN WELDING WORKS, LTD., New Summer St., Birmingham, Eng.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated weekly to the highest degree by our articles on "Wide Awake Merchandising."

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HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO



We Sell! You Deliver!

That's how many dealers are cashing in on the **Taylor "Noil" Tire Pump**, built with plunger and diaphragm. Saves labor—adds to tire life—an investment motorists cannot resist. All inquiries referred to dealers. Write for liberal dealer's offer TODAY. Please name cars handled.

TAYLOR MFG. CO., P. O. Box 485, A. B., Chicago, Illinois

For anything in sheet metal that goes onto an automobile ask the

HAYES MANUFACTURING COMPANY

DETROIT, MICHIGAN

Largest Users of Sheet Metal in the World

Woodworth Treads

will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

Rhineland Ball Bearings

Protect Builder and User Alike

Large European and American Plants Assure Prompt Deliveries.

Rhineland Machine Works Co., 140 W. 42d St., New York

Agents in all large commercial centers

AUTO-TOP FABRICS

OF EVERY DESCRIPTION

Samples and Prices on Request

L. J. MUTTY COMPANY, Boston



PERFECTION SPRING COMPANY

Specialists in **Spring Suspension** High Grade Only

CLEVELAND, OHIO

Schafer Ball Bearings

Famous For Their Durability

BARTHEL & DALY, 42 Broadway, New York

Guide Motor Lamps

(ELECTRIC)

Write for "Guide Books" Nos. 1 and 6

GUIDE MOTOR LAMP MFG. COMPANY
CLEVELAND, OHIO (1)

GOODYEAR

AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

METZ "22" ROADSTER $475

The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor. Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.



UNITED STATES TIRES

ARE GOOD TIRES

Champion Priming Plugs

Start Motor Car, Motorcycle, Motor Boat or Stationary Motor, in the coldest, rawest days—and do it instantly.

$1.25 each at all dealers, or sent prepaid and guaranteed upon receipt of price.

Don't wait for cold weather; be ready for it.

CHAMPION SPARK PLUG CO.
106 Upton Avenue Toledo, Ohio, U. S. A.



A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

MOTOR WORLD

"The Paper That Is Read, Not Merely Looked At"

It ought to be a regular weekly visitor in your office, Mr. Dealer. $2.00 per year—a small price for a big value. Subscribe today.

Motor World Publishing Co., 1600 Broadway, New York

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Why don't you, too, sell

Vitalized Rubber

Diamond Tires

Squeegee Tread

Won't Skid

The Diamond Squeegee Tread is almost human in action.

The outside bars scrape off the grease and slime, the second bars dry the road surface, and the middle bars *grip* and *hold.*

The double thickness Squeegee Tread made of tough, road-resisting Vitalized Rubber insures a good, liberal mileage.

After the Squeegee Bars are worn from long service, there still remains a strong, thick, tough tread made of More Mileage Vitalized Rubber.

Long Wear

All types of Diamond Tires are made of Vitalized Rubber—a process that makes the tire tough enough to fight the road—elastic enough to absorb shocks.

This is one of the reasons why Diamond Tires last longer—because they are built that way.

Honestly Built

Diamond Vitalized Rubber Tires have been put to the severest tests by motorists everywhere and have *made good.*

Built by expert tire builders, assisted by the latest improved machinery, made of fabric and rubber that is of the highest quality obtainable, backed by sixteen years successful tire building, money cannot buy a better tire today than the Diamond.

Selling Satisfaction

You need not hesitate to recommend and sell Diamond Tires. Among all the different tires made, the Diamond stands out prominently as the one that has delivered *maximum* mileage at *minimum* expense—the tire that makes good for everybody everywhere.

Why continue experimenting when you can sell a tire that will *satisfy* and *hold* your trade—Diamond Tires.

Equip with Diamond Tires

BEST FOR AUTOMOBILES, BICYCLES AND MOTORCYCLES

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Car Buyer: I see you advertise an "electric horn" in your equipment. Is it a Klaxon?

Car Agent: Well—no. But it's just about the same.

Car Buyer: In that case I suppose you would just as soon give me a Klaxon in place of it.

Car Agent: Hardly that. You see this signal comes with the car. If you want a Klaxon you have to buy it separately.

Car Buyer: What kind of a horn is the one on the car?

Car Agent: It's an "electric" horn—I don't know its name.

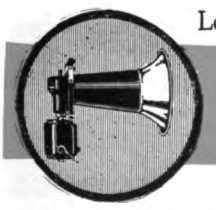
Car Buyer: That doesn't speak very well for your car maker. If he puts on an unknown, and evidently cheap signal, its a pretty good indication that he will skimp somewhere else in the car. I guess I'll look further.

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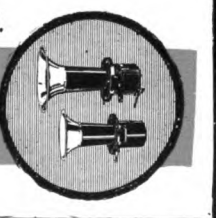
64 car makers—including the makers of practically every high-grade car in America—believe it is a short-sighted policy to lay themselves open to this kind of criticism. They equip with the Klaxon

A. E. C.
Alco
Armleder
H. H. Babcock
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Broc Electric
Buffalo Electric Roadster
Century Electric
Charon (*European*)
Chicago Electric
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F. I. A. T.
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King
KisselKar "Six"
Knickerbocker
Knox
Lancia (*European*)
Lenox
Locomobile
Lozier
Luverne
Marmon
Matheson
Maxwell "Six"
Mercedes
Metallurgique
Mors (*European*)
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National
Nyberg
Oakland
Ohio "Six"
Old Reliable
Oldsmobile
Oxford
Packard
Peerless
Peugeot
Pierce-Arrow
Pope-Hartford "Six"
Pratt
Sayers & Scovill
S. & M. "Six"
Schneider (*European*)
S. G. V.
Simplex
Stafford
Staver
Stearns
Sternberg
Stevens-Duryea
Stoddard-Dayton
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Triumph
Walker Electric
Ward
White
Winton

Lovell-McConnell Mfg. Company, Newark, N. J.



KLAXON



"The Public Safety Signal"

This advertisement planned, written and set up entirely in the Klaxon Factory Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy

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THE double-drive Broc is built from the ground up to be a double-drive car. There is no sacrifice of comfort, service or safety to add an extra lever, post or pedal.

When used as a forward-drive, there is ample room for as many as five occupants. When used as a rear-drive there is clear road-vision for the driver, without uncomfortable seating of the front occupants.

This is only one of eight luxurious models, each designed for the particular service for which it is intended. Let us send you complete information.

The Luxurious BROC

The BROC ELECTRIC VEHICLE COMPANY

1670 East Fortieth Street Cleveland

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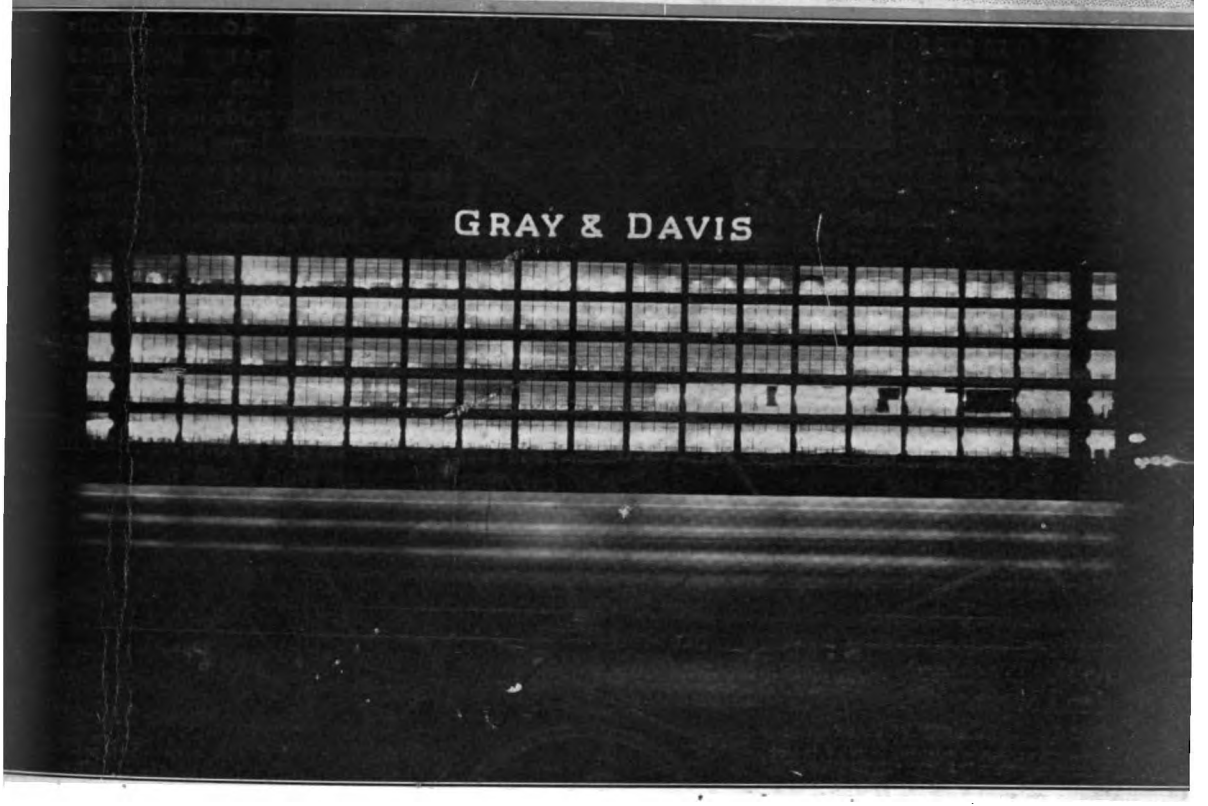
MOTOR WORLD

Trade Paper Giving the World's Motor Ne

L XXXVII
No. 10

New York, November 27, 1913

Ten cents a c
Two dollars a



An Interesting Picture!

Note light reflection in Charles River.
The building is 360 feet long.
5 stories high.
140,000 square feet of space.

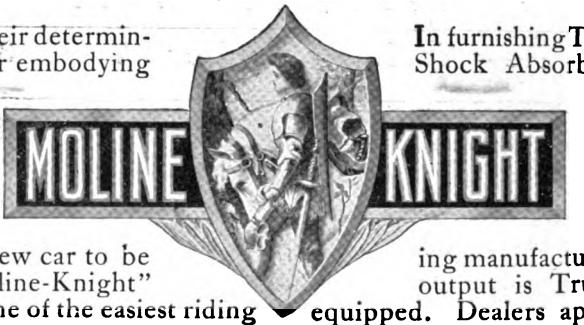
A remarkable example of night photography (unretouched) which graphically illustrates the immensity of our plant. The picture tells the story of a National demand that has forced us to operate by night as well as day, in order to produce sufficient starting-lighting systems to meet contract requirements.

Gray & Davis, Inc., Boston, Mass.

blished Weekly by the Motor World Publishing Company, 1600 Broadway, New Yo

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The New Moline-Knight will have Truffault-Hartford Shock Absorbers

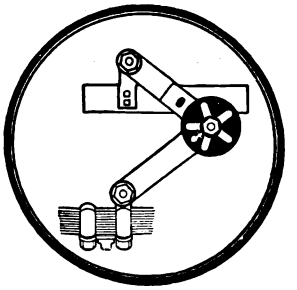


Coincident with their determination to build a car embodying the latest type of the famous Knight power plant, the Moline Automobile Company determined that this new car to be known as the "Moline-Knight" should figure as one of the easiest riding cars on the market.

Tests were made by the Moline engineers of various types of springs and shock absorber equipment. In the final analysis it was proved that Truffault-Hartford Shock Absorbers used in conjunction with highly flexible springs furnished the ideal suspension.

As President of the Moline organization and an engineer of high standing, W. H. Van Dervoort has always been a warm advocate of Truffault-Hartford Shock Absorbers. And in the great victories scored by the Dreadnought Moline in the Glidden Tours and Chicago Automobile Club races Truffault-Hartfords have taken a prominent part.

The advent of the Moline-Knight for $2400, including as it does the famous Knight sleeve valve motor, would seem little less than phenomenal if it were not for the Moline Company's well-known factory facilities for economical production.



In furnishing Truffault-Hartford Shock Absorbers as standard equipment, the Moline Company becomes the twenty-sixth addition to the long list of leading manufacturers whose entire output is Truffault-Hartford-equipped. Dealers appreciate the importance of this device in selling the "comfort idea." Truffault-Hartfords completely eliminate jolt, jar and vibration, reducing the wear on the tires and increasing the endurance of every car part.

It is fast getting to the point where the car manufacturer who does not equip with the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer and the Best"

will be an exception. Meantime car buyers will find it much to their advantage to insist upon Truffault-Hartfords. Five models, including the New Automatic, a shock absorber with three separate spring controls, $60 per set of four. Other models, $50, $40, $25 and $15.

Send for Catalog

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. Office and Works: 142 Bay St., Jersey City, N. J.

Manufacturers of Hartford Electric Starting and Lighting System

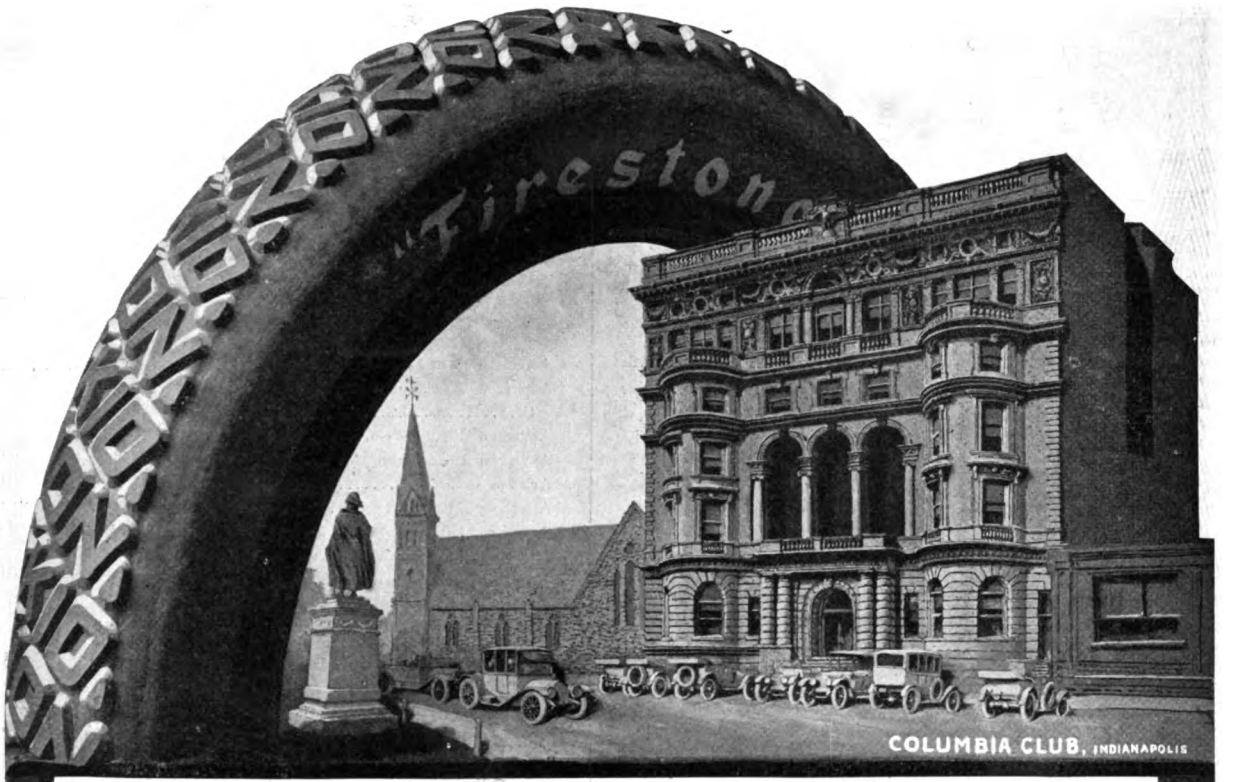
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Firestone---Your Tire Insurance

THE name which appears on every tire made in our factory is a pledge to the buyer that tire service, comfort, security and economy will be his.

The records achieved by Firestone Tires—in meeting the worst and most varied conditions of the speedway, boulevard, mountain road, desert trail and country highway—give a sense of satisfaction and safety to the user—the peace of mind that an insurance policy affords.

Experience is proving every day that Firestone Non-Skid Tires—because of their greater security, comfort and economy—are the practical tires, not only for the icy ways of winter, but for oiled roads, slippery pavements and rough going at any season; not only for rear wheels, but for front. In fact, the use of Firestone Non-Skid Tires for all seasons and all wheels makes tire insurance doubly good.

This insurance is supported by wrapped tread construction—by a two-cure process that allows the most rigid inspection in making—by an elimination of the defects which cause tire breakdowns—by an open steam vulcanizing process that gives an absolute toughness and wear-resistance to the tread.

Tire quality, tread toughness and the greater thickness of Firestone treads make the insurance value of these tires dependable and real—establish them as the tires of

Most Miles Per Dollar

Firestone character—as shown in materials, construction, knowledge and experience—includes these elements of tire security, comfort, economy and complete service. Every owner of an automobile should begin to enjoy them by starting in upon the use of Firestone Non-Skid Tires now.

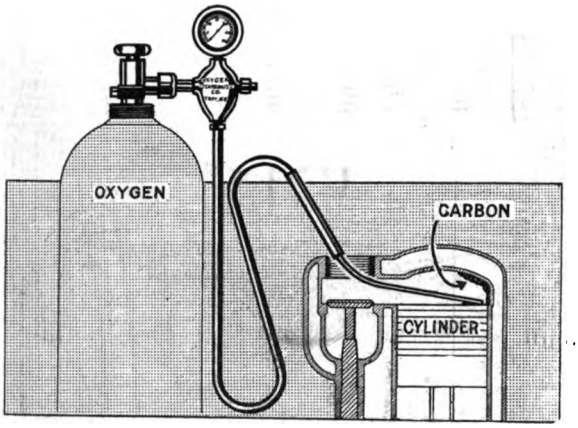
The Firestone Tire & Rubber Company

"America's Largest Exclusive Tire and Rim Makers" Akron, Ohio---All Large Cities

Pneumatic Tires, Truck Tires, Pleasure Electric Tires, Carriage Tires, Fire Apparatus Tires, Tire Accessories, Rims, etc.

Firestone
NON-SKID TIRES

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A Perfect

Carbon Remover for $10

No need to pay more than this for **a first-class carbon remover.** Our outfit **completely** removes every particle of carbon—from **every part** of the cylinders. Does it in less than one quarter of an hour for each cylinder. As a money-maker for garage owners this outfit **has no equal.** It can pay for itself in a few days—after that, all profit. It is also a cheap means for motor truck and large private owners of keeping up the efficiency of their cars.

THE PRICE IS $10.00 (without oxygen tank). This price is very low but—you get a carbon remover that does the work just as well as any other on the market! Every outfit is

Completely Guaranteed

You take no chances—we stand back of every one we sell.

We make this low price as we sell for cash only and do not carry accounts. Our money is not tied up and we share this benefit with you by taking off one-third of the regular selling price. This is a regular $15.00 carbon remover but we give you $5.00 on every one we sell. No other maker can afford to give as good a carbon remover at such a low figure.

Express companies are instructed to allow purchaser to open package before accepting it—therefore you take absolutely no chances.

Price only $10.00. Express prepaid.
Sent, cash with order—or C. O. D.

Oxygen Decarbonizer Company
301 River St. Troy, N. Y.

Send for Information

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WHY

MONOGRAM OIL

Is *Always* Best For *Your* Engine

Pennsylvania CRUDE oil sells in bulk for approximately six cents per gallon.

In the production of our automobile oil—MONOGRAM—only 4½ gallons of it, or 4½ per cent, is obtained from every lot of 100 gallons of Pennsylvania crude.

Therefore it takes over 21 gallons of Pennsylvania crude to make 1 gallon of MONOGRAM.

If there were no by-products, it would COST one dollar and twenty-six cents, plus the cost of refining, to produce one gallon of MONOGRAM OIL.

This 4½ per cent, is the very marrow of the crude with all its remarkable wearing and lubricating qualities and the other 95½ per cent, can only be used for such by-products as gasolene, kerosene, ordinary engine and machine oils, and black oils.

This is one reason why MONOGRAM OIL has been continually successful under that one brand name from the very start of the automobile industry.

Remember this when unscrupulous dealers try to hand you oil that costs them 15 cents a gallon (or less) as a "just as good" substitute for MONOGRAM at the SAME price for which MONOGRAM can be purchased.

Ask for It by Name

NEW YORK LUBRICATING OIL CO.

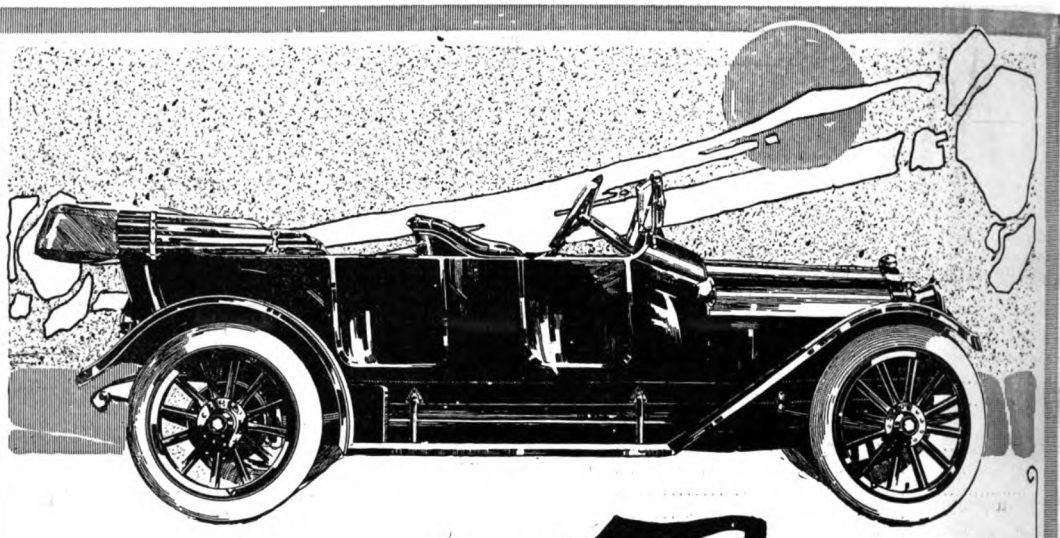
Consolidated with

Columbia Lubricants Co. of N. Y.

116 Broad Street, New York City

BRANCHES AT BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SEATTLE, SAN FRANCISCO, LOS ANGELES, SPOKANE, LONDON, ENGLAND; JOHANNESBURG, SOUTH AFRICA

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Overland

$950

Completely Equipped

with electric starter and generator---$1075

Prices f. o. b. Toledo

FOUR years ago we marketed a smaller car than the 1914 Model for $1250. And it was a bare car—no equipment.

Today an Overland incomparably better—fully equipped, even to electric headlights—costs but $950.

Look around you. Is there another car with a pedigree like this? When you buy an Overland you can be sure you are getting the most for your money.

Catalogue on request. Address Dept. 50

The Willys-Overland Company

Toledo, Ohio

Electric head, side, tail and dash lights
Storage battery
35 Horsepower motor
114-inch wheelbase
Three-quarter floating rear axle
Timken bearings
34 x 4 Q. D. tires
Brewster green body, nickel and aluminum trimmings
Deeper upholstery
Mohair top, curtains and boot
Cowl dash
Clear-vision windshield
Stewart speedometer
Electric horn
Flush U doors with concealed hinges

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, November 27, 1913 No. 10

POPE REORGANIZERS WAIT NAMING OF A 3D RECEIVER

Plans Unsettled Pending Court's Action on Massachusetts Stockholders' Request—Meanwhile, However, President Pope Steps Out.

Plans for the reorganization of the Pope Mfg. Co. are temporarily "in the air," pending the appointment of a third receiver to work with Col. George Pope and Charles A. Morss; the appointment probably will be made next week when the matter comes before the Federal Court in Boston.

The third man will be selected in response to the insistent demand of the Massachusetts stockholders' protective committee, which, having acquired control of proxies representing more than 50 per cent. of the Pope capital stock, is in position to make its influence felt.

It is probable that Charles A. Persons, a manufacturer of bicycle saddles in Worcester, Mass., will be named as the associate of Receivers Pope and Morss. His name was suggested when the protective committee made its first application for three receivers, at which time, however, Judge Aldrich named but two.

The Massachusetts stockholders already have gained one of the points which they sought—that is, the elimination of Albert A. Pope from the affairs of the company. While still retaining the nominal title of President, he has relinquished the duties and last week retired from active work, following, it is reported, a curtailment of his salary.

While the automobile factory in Hartford, Conn., is still being operated, the Massachusetts stockholders also succedeed in having all of the Pope bicycle and motorcycle departments concentrated in the factory at Westfield, Mass. The latter has been devoted wholly to the production of the two-wheelers, but the sales, credit and accounting departments had all remained in Hartford until this week, when they were transferred to Westfield. It is believed that this change in itself will effect economies.

Whether the manufacture of Pope automobiles will be continued is still an open question, but in the present state of the money market the chances are against it.

DISCO PLACES ITSELF IN HANDS OF RECEIVER.

Preceded by a few low rumbles, the Disco Co., of Detroit, maker of the widely known electric starter of that name, has gone into a voluntary receivership in order to protect itself and its creditors. The Security Trust Co, of Detroit, is acting as trustee. The assets are in excess of liabilities and, for the time being at least, factory operations will be continued.

To the Disco Co. really belongs the credit of giving impetus to the engine starter movement in this country. Its first device was a gas starter, which attained such a measure of popularity that the attention of the whole trade was attracted. In due course, however, the electric starter practically supplanted it, and after delaying slightly too long the Disco people brought out a system of that type.

McFarlan Adopts Gray Pneumatic Shifter.

Marking the first formal adoption of the Gray pneumatic gear shifting and engine starting system by any manufacturer, the McFarlan Motor Co., of Connersville, Ind., has let it be known that henceforth its six-cylinder model will carry this apparatus as standard equipment but at a slight increase in price over stock models. The Gray system, in its simplest aspect, consists of a small compressor which is driven by the engine, a compressed air reservoir and the gear shifting mechanism, which operates by selection through a quadrant on the steering wheel and plungers working in cylinders, the plungers being attached to the sliding gears. In operation, the desired gear is marked by the steering gear indicator and the shifting operation completed by depressing the clutch pedal.

TIRE PRICES GO DOWNWARD; REDUCTION OF 18 PER CENT

Following Guarantees to Dealers and a Firestone Notification, Goodrich Takes Action—Causes of the Reduction.

After some little fencing on the part of several of the more prominent manufacturers, the expected reduction in the price of tires was made a reality by the B. F. Goodrich Co., and its subsidiary, the Diamond Rubber Co., on Monday last, 24th inst. It amounts to 18.29 per cent. on plain tread casings and 10 per cent. on tubes, the discounts for preferred dealers also being increased 5 per cent.

Taking the most popular size, 34 x 4, as a basis, the new prices and the old work out as follows:

	Old price.	New price.
Casings	$29.80	$24.35
Tubes	5.65	4.90

None of the other tire manufacturers have yet announced reductions, but the announcements are due at any moment and will almost surely make their appearance before the end of the present week. That they will at least meet the Goodrich-Diamond quotations is certain.

While the Goodrich-Diamond figures were not announced until Monday, and so far as users are concerned will apply only from that date, they are retroactive to November 1st, so far as the trade is involved. Rebates will be made on all trade purchases made on and after that date.

For all of three months, and particularly since the passage of the Underwood tariff bill, and as was predicted in Motor World of September 25th, reductions in the prices of tires have been looked for. Indeed, reports to that effect were so persistent that on October 29th last the B. F. Goodrich Co. issued a notice of its intention to protect dealers against shrinkage in the value

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of goods purchased on and after November 1st, this notification being made to "relieve the trade of anxiety and permit dealers to safely continue their stocks in a condition to supply their customers' requirements."

The United States Tire Co. and the Goodyear Tire & Rubber Co. promptly followed with similar assurances to the trade, but it was not until several days later, when the Firestone Tire & Rubber Co., whose prices always have ruled slightly higher than the others, not only assured protection but gave notice of its positive intention to reduce prices, that the forthcoming reduction was made a certainty. At that time, however, Firestone gave no figures.

Declaring that its intention had been "distorted and the situation rendered more unsettled," the Goodrich-Diamond interests then took the bull by the horns and announced its new list.

What will be the effect of the lower prices cannot be foretold, but one man uncommonly well informed predicts that it will play havoc with cut-price dealers and with those who have on hand large stocks of seconds and unguaranteed goods.

In forecasting its reduction, the exact extent of which is expected to be made public daily, the Firestone people stated that it would be based on the lower price of crude rubber, which, after reaching the unprecedented price of $3 per pound in 1910, steadily declined until, in February of this year, it fell below the dollar mark and on Monday last best Para was quoted at 75 cents. The reduction in the duty on tire ingredients and other essentials affected by the Underwood tariff has also exercised a downward influence.

Fischer Loses Out in Higher Court.

Charles Fischer, who holds a patent on a flexible shaft, probably doesn't attach much value to it now; he sued the Automobile Supply Mfg. Co., of Brooklyn, N. Y., for infringing it and the United States District Court for the Eastern District of New York threw the case out of court and last week the United States Circuit Court of Appeals, sitting in New York City, said the District Court did the right thing. Fischer's patent is No. 969,660 and was granted September 6, 1910, to Franz Schmidt and Albert Grundmann, of Berlin, Germany. It covers a shaft wherein coiled wire is covered by a coiled strip which fits into the depressions between the coils.

Bantam Bearings Opens Office in Detroit.

The Bantam Anti-Friction Co., of Bantam, Conn., has opened an office in Detroit in the Dime Savings Bank Building. It is in charge of J. W. Hill.

"LOOSE" CONTRACT LIKELY TO BE NO CONTRACT AT ALL

Dealer Made Deposit but Took No Cars, Yet Court Gave Him Money Back—Supposed Contract Declared Only an Option.

Builders or distributers of automobiles who establish contractual relations with a dealer or subdealer would do well to be sure they have prepared a good, binding contract, according to a suit which is now approaching argument in the Appellate Division of the New York Supreme Court, Second Department; thus far the case has gone against the manufacturer, who has been ordered to return the full amount of the deposit made by the dealer or salesman. The court made plain that a little legal advice before action would have saved a lot of trouble.

The action was brought by Charles W. Shaffer against Vandewater & Co., which now is the manufacturer of Correja cars; he had entered into an agreement with the Correja Motor Co. to sell 20 cars, and deposited $500 on the agreement. He ordered one car and then not only refused to take even that one, but demanded his money back. The Municipal Court of New York City, Judge Wells presiding, held that the contract wasn't a contract at all, but was nothing more than an option, whereupon he directed that Schaffer be returned all of the $500.

Judge Wells stated preliminarily that all ambiguities in a written contract are properly construed against the party who prepared the contract, which in this case was the Correja company, which later assigned the contract to Vandewater & Co. In his discussion of the form and validity of the agreement he said: "It is obvious that this agreement was a mere option granted the plaintiff by the Correja Motor Co. to purchase during one year 20 Correja runabout cars. This option became a binding agreement to purchase and accept and pay for these cars only 'as and when' the plaintiff 'ordered' the cars.

"Under this agreement a deposit of $500 was made by the plaintiff with the Correja company to 'apply as a blanket deposit on the cars ordered' and 'to be returned in full at the end of the season . . . with the understanding that the Correja company might credit against any account past due from the dealer to the company any portion of or all of said deposit not already applied upon the purchase price of any car.'

"The Correja company thus became trustee of these moneys and accountable to plaintiff for the return of the same in full at the end of the season."

Judge Wells touched upon the transfer of the contract by the Correja to the Vandewater company and said that the transfer was in reality a new contract. He also mentioned that the one car Schaffer had ordered was taken back and said, "I think there was a personal and express promise made by defendant to this plaintiff to repay this $500 at the end of the season in full. No part of this deposit appears to have been applied by the Correja company either to any account past due from plaintiff to it or to the purchase price of the car ordered by the plaintiff. In the absence of any such application the full amount was due from the Correja company to the plaintiff at the end of the season. Instead of this the Correja company elected to rescind the purchase and claimed damages for the breach.

"No assignment of this claim for damages accruing to the Correja company was made to defendant by the Correja company. It follows that defendant is not entitled to offset these damages, if any, due the Correja company against a recovery against defendant, as there never was any contract other than for the purchase of the one car mentioned, or any promise on part of plaintiff to pay for but that one car he ordered."

Shaffer Quits Cars to Build Engines.

Harry S. Shaffer, secretary and treasurer of the Keeton Motor Co., of Detroit, has resigned those offices and retired from that company to become president of the Shaffer Motor Mfg. Co., of Alexandria, Va. The company will manufacture the Dunham motor, patented by Herman E. Dunham while on the Pacific Coast and later brought to Detroit for experimental purposes. It is claimed that it will not only burn the lowest grade of fuel but will increase efficiency.

Victor L. Emerson, of the Emerson Mfg. Co., of Alexandria, which for years has built engines, chiefly of the marine type, has also become interested in the Dunham invention and it is in the Emerson plant that the Dunham motor will be produced. It is stated that the factory was purchased by Shaffer, who will retain Emerson's services.

Body Builders Sue Metropolitan Dealer.

The New Haven Carriage Co., of New Haven, Conn., which builds bodies for the automobile trade, filed suit this week in the Supreme Court for New York county against S. J. Wise & Co., Touraine and Paige dealer in the metropolitan district; the complaint states that between April 1 and August 22 of this year the Wise company contracted an indebtedness of $2,027.64 on which $2,004.16 remains unpaid.

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COURT FAVORS GARAGE ON THREE INSURANCE POINTS

California Judge Says Presence of "Gas" Does not Necessarily Void Policy—Rules on Other Important "Gas" Matters.

"Provisions in an insurance policy are always construed so as to prevent a forfeiture, if the language will reasonably permit such a construction," is established according to the opinions of the California Supreme Court affirming the judgment of Judge Austin in what are known in the insurance world as the four W. J. O'Neill cases. They involved the policy conditions of suspension and non-liability for loss when more than a quart of gasolene is used or kept on the insured premises, which in the case at bar were used in part as an automobile repair-shop.

The decision as involving this point is the first of the California court on appeal and establishes the law as regards insurance policies containing this general condition. Three definite rulings are laid down as the law under policies covering the use and keeping of gasolene, and in view of the popularity of the automobile and the general use and keeping of gasolene in garages and automobile shops are of popular interest. The principles laid down are these:

"Where a policy of insurance against loss by fire allows the insured premises to be used as an automobile repair-shop a printed condition in the policy that the company shall not be liable for loss occurring while more than one quart of gasolene is used or kept on the premises does not exempt the company from liability for loss from fire occurring from the ignition of several gallons of gasolene emptied from the leaking gasolene reservoir of an automobile brought into the shop for the purpose of having the leak repaired as it is to be presumed that the company undertook to insure against all ordinary risks incident to the conduct of such a business.

"Under a clause in the policy forbidding the admission into the insured building of any gasolene other than that contained in the tanks of machines 'permanently or temporarily stabled therein' the policy is not suspended by the presence on the premises at the time of the fire of several other automobiles, each containing more than one quart of gasolene in its reservoir.

"Under the clause in the policy suspending the insurance while more than one quart of gasolene was kept on the premises, the fact that at divers times before the fire considerable quantities of gasolene had been kept therein in addition to that in tanks of machines, and that kept for use in repair work does not void the policy where no such excess was on hand at the time of the fire."

To Produce Hexter's Gas-Electric Truck.

For the purpose of taking over and producing the ingenious gas-electric truck developed by P. K. Hexter, of New York, the Roland Gas-Electric Vehicle Corporation was incorporated this week under the laws of New York, with an authorized capital of $200,000. Roland R. Conklin and Hexter himself are the chief figures in the enterprise, of which Hexter will be general manager.

The new company already has secured a factory at 236-242 Avenue B, New York, in which it is expected 100 vehicles will be produced for the 1914 market. The Hexter truck, in which the ingenious control permits it to be handled even from the sidewalk, was described in detail in Motor World of September 25th last.

L. P. C. Completes its Organization.

The L. P. C. Motor Co., which was organized last month in Racine, Wis., by William Mitchell Lewis, the former president of the Mitchell-Lewis Motor Co., has completed its organization by the election of F. S. Gordon as treasurer. Lewis himself, as was stated at the time the company was formed, is president; Rene M. Petard, vice-president and engineer, and James M. Cram secretary and sales manager. E. B. Hand is general counsel, C. B. Chamberlain purchasing agent, and O. R. Delamater superintendent. The "Lewis Six," as the car which the new company will produce will be styled, will sell for $1,600.

Better Bids for the R. C. H. Property.

For a while it looked as if Harris Bros. Co., of Chicago, would secure the R. C. H. assets in Detroit without serious competition. They raised their original offer of $150,000 for the personal property to $240,000, but as Theodore Friedberg, of New York, and the Lincoln Realty Co., of Detroit, made a bid on a commission basis, which they guaranteed would not be less than $240,000, the trustee has given the Harrises until tomorrow to raise their bid to $255,000, all of which indicates how inadequate was the bid of $135,000 tendered by J. F. Hartz, the R. C. H. president, and his associates, for the entire assets of the company.

Patent Tire Director Demands Loan.

W. T. Wheeler, a director of the Mechanical Rubber Tire Co., of Brooklyn, N. Y., filed judgment this week in the New York county clerk's office for $1,341.88; the amount asked for was for money loaned.

SUPPLYMAN GETS 3 YEARS IN JAIL ON FRAUD CHARGE

President of Kansas City Company Found Guilty of Trying to "Beat" Creditors — Jury Disagrees on Companion's Guilt.

Instead of defrauding his creditors, as it is charged he planned, Harry D. Todd, formerly president of the Auto Specialty Co., of Kansas City, is quite likely to serve three years in jail. He was found guilty last week on five counts on a charge of using the United States mails to defraud, and the judge imposed the three-year term. In addition to the time sentence, Judge Youmans in the Federal court imposed fines aggregating $1,250. Todd, however, has appealed and is at liberty under bond.

Leonard Ullman, another officer of the company, and John T. Fenn, the treasurer, were indicted for the same offense and Todd's conviction is due to the testimony of Fenn, who turned State's evidence. In the case of Ullman the jury failed to agree and it is said he will be tried again. The jury was unable to decide whether Ullman originated the scheme upon which the indictment was based.

The troubles of the specialty concern began, according to witnesses, when Todd, as president, ordered goods from manufacturers and jobbers in various parts of the country when he knew the business was in a failing condition. The amount of goods purchased and never paid for is estimated at between $40,000 and $50,000. When the firm finally went into the hands of a receiver about $2,000 worth of goods was found, it is alleged, hidden in various places about the store of the company. The testimony of Fenn was that it was the intention to get these goods out as soon as the bankruptcy proceedings were settled and sell them. A. J. Martin, United States deputy marshal, who acted as special receiver, testified that he discovered the articles.

Jackson Motor Shaft Adds $50,000.

The Jackson Motor Shaft Co., of Jackson, Mich., has increased its capital stock from $75,000 to $125,000, the increase being represented wholly by preferred stock, approximately $30,000 of which already has been subscribed and paid in. This refinancing gives the company a large margin of working capital and places it on Easy street. At the same time that the semi-reorganization was effected, the following officers were elected: L. C. Bloomfield, president and general manager; Winthrop Withington, vice-president; John L. Allen, treasurer; F. H. Lewis, secretary.

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PREST-O-LITE AGAIN DONS WAR PAINT TO MEET AVERY

Milwaukee Man Sued Many Times Before, is Sued Again—Prest-O-Lite Claims He Violates Law in Refilling its Tanks.

Although Percy C. Avery, of Milwaukee, is generally credited with having conceived the Prest-O-Lite plan of storing gas in portable tanks, he isn't a stockholder in the Prest-O-Lite Co. and isn't traveling to fame and fortune on Prest-O-Lite dividends; instead he and the Prest-O-Lite Co. fell out several years ago and ever since then the Indianapolis corporation has periodically haled him to court.

The last attempted haling occurred last week in the United States District Court for the Eastern District of Wisconsin, sitting in Milwaukee, where the Prest-O-Lite Co. asked the court to stop Avery refilling and selling Prest-O-Lite tanks.

Avery appeared in the automobile world about 1902 with his canned gas invention and interested Carl G. Fisher and James A. Allison, who with Avery formed the company and began to turn out tanks under the Claude and Hess patent, No. 664,383, but a few years later Avery and his coworkers fell apart. They claimed he wasn't playing fair with them, and after the dust settled Avery was out of the company with about $33,000 in his pocket, and, soon after, his former partners entered the millionaire class.

Avery next appeared in the trade in Milwaukee, doing business as the Avery Portable Lighting Co. Besides doing business he was charged with making unkind remarks about the Prest-O-Lite people, who proceeded forthwith to file a libel suit, a suit for infringement of the Claude and Hess patent, a suit charging unfair competition in refilling Prest-O-Lite tanks and a suit demanding that Avery bring back a patent on a refilling device which he was charged with having taken when he made his departure from the Prest-O-Lite front door. The Avery Lighting Co., which operated in New York State as a subsidiary of the Milwaukee company, also was sued in the United States District Court in Northern New York.

A checking up of this mass of litigation reveals results in the New York suit, wherein Avery was ordered to stop business, and in the filling device patent case, Avery being ordered to return the patent.

When, several months ago, the Claude and Hess patent was overturned by the courts, Avery formed the Acetylene Gas Co. in Milwaukee, the business being the filling and selling of tanks. The Prest-O-Lite Co. now claims, however, that Avery not only filled and sold his own tanks but refilled and sold Prest-O-Lite tanks, hence the present suit.

Both Avery and the Prest-O-Lite Co. are waiting to hear what Judge Sanborn has to say about it.

Reorganizers to Make Parcel Wagons.

Frank T. Hulswit and his associates who bought the assets of the bankrupt Grand Rapids (Mich.) Motor Truck Co., are organizing a new corporation to operate the plant, which, however, will drop the larger truck produced by the old company. Instead, the reorganizers will manufacture a 15-horsepower 500-pound wagon designed especially for the delivery of small packages. It will be of the moto-kart type with the package receptacle in front and the driver in the rear.

Pelletier Promises Popular-Priced Electric.

E. LeRoy Pelletier, president of the Tiffany Electric Car Co., which purchased the electric vehicle plant of the Flanders Mfg. Co., in Pontiac, Mich., in July last, has let it be known that within 30 days his company will have ready for delivery a $750 two-passenger electric runabout. It will be styled the Tiffany Bijou and, according to Pelletier, the means and facilities to manufacture it in quantities have been assured.

Louisville About to Lose its Crown.

The Crown Motor Co., of Louisville, Ky., is preparing to remove from that city to Hamilton, O. Although organized nearly a year ago with an authorized capital of $500,000, the company has not cut much of a figure in the automobile industry. It is stated, however, that it has orders in hand for 10,000 automobiles for 1914 delivery.

Steenstrup Reenters Trade in Detroit.

Peter Steenstrup, one-time sales manager of the Hyatt Roller Bearing Co., and who also served as secretary of the Motor & Accessory Manufacturers, Inc., has returned from Oregon to again take up his home in Detroit. He will reenter the automobile business in that city, having already acquired control of the Livingston pressed steel wheel.

Monaco Now Claims the Gibson Project.

The Gibson Motor Car Co., which has an office in the Oliver Building in Pittsburgh, and which has been successively reported as being about to locate in Alliance, O., and Rochester, Pa., is now stated to have acquired a factory building in Monaco, Pa.; it is added that the building will be remodeled to suit its purposes.

NEW YORK STATE DEALERS' ASSOCIATION TAKING FORM

Representatives of Five Local Bodies Meet in Albany and Name Committee on Constitution—Organization Probable Dec. 2.

After many attempts, the endeavor to get the automobile dealers of New York State into one organization at last is in a definite way to bear fruit, as a result of the meeting called by the Automobile Dealers' Association of New York City which occurred in Hotel Ten Eyck, Albany, on Thursday last, 20th inst. Two hundred dealers were not present, as stated by one publication, the call which had been issued not being of a general nature and having been extended only to local organizations and not to individuals. Five local bodies, however, were represented — New York City, Buffalo, Rochester, Syracuse and Albany—and assurances of support from several absent organizations were also received.

The body, which will assume working shape at a meeting in Albany on Tuesday next, 2nd prox., will undoubtedly be styled the New York State Automobile Dealers' Association and will have headquarters in Hotel Woodward, New York City, where the New York City organization maintains an office.

Until the committee which is drafting the constitution and by-laws reports on Tuesday next, the exact form of government will not be known, but it is believed that the dues will be purely nominal, probably not more than $5 per annum. The committee entrusted with that work consists of R. H. Johnston, of New York, chairman; R. E. Brown of Buffalo, Wm. Berry of Rochester, C. D. Hakes of Albany, and E. Lascaris of the Importers' Automobile League.

Those present at the initial meeting on the 20th were as follows: New York Association—A. M. Day, R. H. Johnston, John F. Plummer and Charles A. Stewart; Buffalo—R. E. Brown, S. C. Miller and C. F Monroe; Rochester—William Berry, Thos. Northway and A. M. Zimbrick; Syracuse—George H. Harris; Albany—C. D. Hakes, E. V. Stratton, Westcott Burlington and M. Lansing.

Christie May Quit Hoboken for Erie.

The Christie Front Drive Truck Co., which started business in Hoboken, N. J., about a year ago, is now negotiating for a factory in Erie, Pa. The company builds fire apparatus and commercial vehicles employing the Christy front wheel drive, but has never manufactured very many of them.

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The Week's Incorporations

Staunton, Va.—Falcon Cycle Car Co., under Virginia laws; authorized capital, $150,000; to manufacture cyclecars.

Jarkson, Mirh.—Standard Car Mfg. Co., under Michigan laws; authorized capital, $85,000; to manufacture motor vehicles.

Cleveland, O.—Foster-Birdsall Motor Car Co., under Ohio laws; authorized capital, $10,000. Corporators—C. R. Foster, F. W. Frey and J. G. Weil.

Buffalo, N. Y.—Motor Carette Co., under New York laws; authorized capital, $30,000. Corporators—Henry J. Carrigan, Charles J. Kern and A. M. Pearsall, all of Buffalo.

Chicago, Ill.—Robert M. Cutting Co., under Illinois laws; authorized capital, $10,000; to deal in motor cars. Corporators—Frank P. Page, L. M. O'Connor and James E. Hauronic.

Everitt, Wash.—Coast Four Wheel Drive Auto Co., under Washington laws; authorized capital, $10,000. Corporators—E. J. Kennedy, L. A. Frazier, M. A. Kennedy and C. R. Frazier.

Newcastle, Ind.—Goodwin-Gallivan Motor Co., under Indiana laws; authorized capital, $10,000; to retail motor cars. Corporators—William M. and John C. Goodwin and James P. Gallivan.

Walterboro, S. C.—Walterboro Garage Co., under South Carolina laws; to deal in motor cars and conduct a repair business. Corporators—R. H. Wichman, A. H. Wichman and P. J. Lucas.

Ottawa, Ill.—S. G. Gay Co., under Illinois laws; authorized capital, $200,000; to manufacture auto trucks. Corporators—S. G. Gay, L. W. Nichols and Chester T. Bangs, all of Ottawa.

Concord, N. C.—Cabarrus Motor Co., under North Carolina laws; authorized capital, $10,000; to conduct a general motcr vehicle business. Corporators—Parks Lafferty, Joe McCanless and others.

Florence, S. C.—Covington Co., under South Carolina laws; authorized capital, $15,000; to conduct a general motor vehicle business. Corporators—Frank J. Brand, of Spartansburg, and others.

Tiffin, O.—N. J. Cochrel Service Co., under Ohio laws; authorized capital, $10,000; to conduct an automobile service. Corporators—N. J. Cochrel, E. E. McNorris, M. L. Cleveland and James D. Watson.

Everitt, Wash.—Pacific Electric & Automobile Co., under Washington laws; authorized capital, $7,500; to deal in motor cars. Corporators—J. F. Reardon, F. D. Stockbridge and W. F. Knowles.

San Antonio, Tex.—Automobile Club of San Antonio, under Texas laws; authorized capital, $8,000. Corporators—W. A. Herring, Emil Frank, H. G. Staacke, Dr. Frederick Fielding and John B. Carrington.

Buffalo, N. Y.—Clement Motor Sales Co., under New York laws; authorized capital, $50,000. Corporators—William J. Clemens, 1413 Main street; John G. Lesswing, and R. B. Metro, both of 719 White Building.

Cleveland, O.—Quick Action Spring Repair Co., under Ohio laws; authorized capital, $15,000; to repair automobile springs. Corporators—Henry Wavro, G. H. Murchian, L. T. Jones, S. S. Levy and Fred Zumpft.

Kalamazoo, Mich.—Kalamazoo Auto Dealers' Association, under Michigan laws; to give speed exhibitions. Corporators—G. A. Coates, G. E. Bolye, L. A. Kraft, H. A. Wothington, Leo T. Flansburg and Harry A. Scott.

Waterloo, Ia.—Burd Auto & Supply Co., under Iowa laws; authorized capital, $15,000; to deal in motor cars and accessories. Corporators—Charles Burd, Waterloo; A. F. Burd, Grundy Center; Lizzie E. Burd, Waterloo.

Aberdeen, S. Dak.—Kerosene Karburetter Kompany, under South Dakota laws; authorized capital, $500,000. Corporators—W. B. McLaughlin, J. S. Tilney, George J. Hinds and Edward M. Skinner, of New York; H. G. Fuller, of Pierre.

New York, N. Y.—Merchants' Motors Sales Co., under New York laws; authorized capital, $120,000; to conduct a general motor vehicle business. Corporators—Bela Cukor, Henry V. Radonitz and Charles J. Quinn, all of 245 West 53rd street.

Louisville, Ky.—Louisville Automobile Light Controlling Co., under Kentucky laws; authorized capital, $10,000; to manufacture headlights. Corporators—James C. Stone and J. G. Harris, of Louisville; E. D. Lake and N. G. Marks, of Springfield.

Milwaukee, Wis.—Wisconsin State Rubber Co., under Wisconsin laws; authorized capital, $10,000; to establish a general rubber goods business and handle tires and accessories. Corporators—Harold D. Detienne, Mrs. Detienne and Mrs. Wallis.

New York, N. Y.—Lork Robe-Rail Co., under New York laws; authorized rapital, $5,000; to manufacture and deal in motor car accessories. Corporators—Clinton W. Crow and Willard J. Crichton, both of Rye; Reuben W. Johnson, Monmouth Beach, N. J.

New York, N. Y.—Paige-Detroit Co. of New York, under New York laws; authorized capital, $50,000; to deal in motor cars, etc. Corporators—Edward M. Dalley, Larchmont; S. J. Wise, 250 West 91st street; Fred W. Kolb, 766 Ocean avenue, Brooklyn.

Hammondsport, N. Y.—J. A. Osborne Mfg. Co., under New York laws; authorized capital, $5,000; to manufacture tandem attachments for motorcycles, etc. Corporators—John A. Osborne, Olive Osborne and J. Walter Pattison, all of Hammondsport.

Vermillion, S. D.—Vaughan-Harris Co., under South Dakota laws; authorized capital, $25,000; to manufacture the Radius Truss rod for use on motor cars and other vehicles. Corporators—M. A. Vaughan, R. E. Vaughan and George O. Harris ,all of Vermillion.

New York, N. Y.—Auto-Ped Co., under Delaware laws; authorized capital, $1,000,000; to manufacture, sell and deal in and with cars, carriages, boats and motor vehicles of all kinds. Corporators—Joseph F. Curtin and Clarence E. Eaton, both of New York City.

Bronx, N. Y.—Pneufiller Tire Co., under New York laws; authorized rapital, $1,000; to engage in a general tire business. Corporators—Frank Eden, 315 East 84th street, New York City; Harry L. Hill, 1337 Clinton avenue; Max Monfried, 299 Broadway, New York City.

New York, N. Y.—Golde Patent Mfg. Co., under New York laws; authorized capital, $200,000; to manufacture automobile supplies and accessories. Corporators—Hannah L. Geller, 846 Kelly street; Bernard C. McKenna and Nathaniel M. Kaplan, both of 149 Broadway, N. Y.

Bronx, N. Y.—Mott Haven Garage Co., under New York laws; authorized capital, $1,000; to operate a garage. Corporators

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—Frederick J. Hinners and Katherine Hinners, both of 585 East 135th street, New York City; John P. Indorf, 160 St. Ann's avenue, New York City.

Auburn, N. Y.—McIntosh & Seymour Corporation, under New York laws; authorized capital, $2,200,000; to manufacture Diesel engines, etc. Corporators—Edwin S. Church, Franklin B. Kirkbridge, 55 Wall street, N. Y.; Philip W. Henry, 25 Broad street, New York.

Queens, N. Y.—G. Piel & Co., under New York laws; authorized capital, $100,000; to manufacture motors, engines, etc. Corporators—Gottfried Piel, 150 Riverside Drive, New York; Cornelius S. Pinkney, 716 Madison avenue, New York; Harry O. Robinson, 5000 Broadway, New York.

New York, N. Y.—United States Auto Rim Co., under New York laws; authorized capital, $50,000; to manufacture automobile rims, sundries, etc. Corporators—Christian W. Schildwachter, 45 West 127th street; Augustus Linden, 1883 Park avenue; Philip S. Smith, 1777 Broadway.

New York, N. Y.—Patent Rubber Co., under New York laws; authorized capital, $50,000; to manufacture tires and rubber goods. Corporators—William N. Croxton, 1123 Broadway; J. George Metz, 4286 Park avenue; Charles L. Brookheim, Riverview Manor, Hastings-on-Hudson, N. Y.

Parkersburg, W. Va.—Market Garage, under West Virginia laws; authorized capital, $25,000; to operate a garage and deal in motor cars and supplies. Corporators—E. McCoy, Norma V. McCoy, O. D. Strader, Carrie R. Strader, J. H. Knapp and Florrie Knapp, all of Parkersbirg.

Morgantown, W. Va.—Roberts Gas or Gasolene Engine & Car Co., under West Virginia laws; authorized capital, $150,000. Corporators—J. M. Roberts, Pittsburgh, Pa.; Leopold Sigwart and Frank Sigwart, of Morgantown; H. P. Keenan, Fairmont, W. Va.; Eugene Sommerville, Grafton, W. Va.

New York, N. Y.—H. Scott Johnston Co., under New York laws; authorized capital, $3,000; to deal in motor cars. Corporators—H. Scott Johnston, 35 Caroline avenue, Yonkers; William A. Hall, 15 Fort Washington avenue, New York City; Adolph Kornblum, 188 St. Nicholas avenue, New York City.

Pittsburgh, Pa.—Artillery Automobile Tire Protector Co., under Delaware laws; authorized capital, $100,000; to manufacture, sell and deal in automobile tires. Corporators—John C. Willington and H. C. May, of Pittsburgh; George A. Pestel, McKeesport; A. J. Coppock, Indianapolis, Ind.; Clarence J. Jacobs, Wilmington, Del.

LAUNCH $2,000,000 DIESEL ENGINE COMPANY IN AUBURN

Steam Engine Plant in New York State to Be Utilized by McIntosh & Seymour Corporation—Will Use Swedish License.

The Diesel engine, which "fires" through heat generated by compression and which is extensively used in ships, is to be manufactured in America by a corporation which was formed this week for that purpose—the McIntosh & Seymour Corporation. While this company's immediate plans include only the manufacture of stationary and marine types, the possibilities of the motor for automobile use have not been overlooked.

The new corporation will take over the McIntosh & Seymour Co., of Auburn, N. Y., a steam engine builder, and will operate in that company's factory; the steam engine manufacture will not be discontinued. The company is to operate under a license from the Swedish Diesel Motor Co., of Sweden, whose motors are built after a system developed by its chief engineer, Jonas E. Hesselman, and known by his name.

The company is incorporated at $2,200,000 and is backed by Frank A. Vanderlip, president of the National City Bank, of New York City; Thatcher M. Brown, of Brown Bros. & Co., New York bankers, and Marcus Wallenberg, president of Stockholm's Enskilda Bank, of Stockholm, Sweden.

Besides these, there are interested in the company Edwin S. Church, former head of the Akron plant of the International Harvester Co.; J. A. Semour, of Auburn, N. Y.; Franklin B. Kirkbride, of New York City; Oscar Lamm, of Stockholm; Philip W. Henry, of New York City, and W. M. Coleman, also of New York City, who is general counsel. French will be president of the company and Seymour, who now heads the Auburn company, will be vice-president and in charge of engineering work.

The motor was invented by Dr. Dudolph Diesel, who recently was drowned while crossing the North Sea. The Busch-Sulzer Bros. Diesel Engine Co., of St. Louis, was formed several years ago to make Diesel engines in America, but it is said that the licenses of this and the new corporation in no wise conflict. However, the Busch-Sulzer company declined to discuss the matter.

Figures That Should Check Pessimism.

While companies whose stock is listed on exchanges or traded in on curbs periodically make public approximate figures disclosing the volume of their business, the Moon Motor Car Co., of St. Louis, is one of the few which has permitted a real insight into the extent of its transactions of the last three months, which figures should serve to give pause to the pessimism which prevails in some quarters. They show an increase during the months of August, September and October of 52 per cent.

Shipments of Moon cars in October alone were 96.01 per cent. in excess of the record for October, 1912. The figures as disclosed by Vice-President McDonald, are as follows:

The total shipments for October, 1913, were $89,414.05, as against $47,612.58 in October, 1912, a gain of $41,801.47. The total shipments for the three months, August, September and October this year, were $190,451.69, as against $125,328.95, the total shipments for the same period last year, a gain of $65,122.74.

Briggs-Detroiter Earned 40 per Cent.

Orders for twice as many cars as were in hand at the same time last year were reported at the annual meeting of the Briggs-Detroiter Co., which occurred in Detroit last week. While the profits of the company are not definitely given, it is stated that they amounted to more than 40 per cent. of the company's capitalization. At the meeting all of the incumbent officers were reelected, as follows: C. S. Briggs, president; John A Doyle, vice-president; Emil D. Moessner, secretary and treasurer.

Monsieur Briscoe Again Visits America.

Benjamin Briscoe, of Briscoe Bros., of Paris, and former president of the United States Motor Co., is again in this country for a long visit. While his transactions largely will have to do with the marketing of his new Briscoe light car and Ajax cyclecar in the United States, Briscoe himself refuses to talk about his plans. His family came over with him and will make an indefinite stay.

Hood Rubber Adds Another Million.

The Hood Rubber Co., of Boston, which, among other things, produces Hood-Shawmut tires, has increased its capital stock from $2,500,000 to $3,500,000. The increase is represented wholly by preferred shares which the directors have been authorized to issue as needed but at not less than par value.

Sandusky's Assets and Debts Nearly Equal.

Schedules in bankruptcy filed last week by the Sandusky Auto Parts & Motor Truck Co., of Sandusky, O., which was brought down by the failure of the Michigan Buggy Co., of Kalamazoo, show a slight excess of assets over liabilities. The former total $310,305.45 and the liabilities $308,035.23.

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In the RETAIL WORLD

The Van Motor Co., of Poughkeepsie, N .Y., which has a branch in Newburgh, N. Y., has taken over the business of the Mogul Auto Co. in the latter town; the Van company, whose Newburgh manager is Malcolm E. Perrott, has moved its branch from the Fowler building in Chambers street to the Mogul location at 117 Broadway. The Mogul company was formed three years ago and in that time is said to have handled $200,000 worth of new and used cars. Its heaviest stockholder, William H. Walker, of New Windsor, N. Y., recently opened a brokerage business in New York City and its manager, Joseph Judge, entered business for himself.

J. W. Atwood has been elected president of the Buick Automobile Co., of Dallas, Tex., to succeed F. W. A. Vesper, who several months since resigned to become sales manager of the parent company in Flint, Mich. The other officers of the Dallas corporation are E. O. Tenison, vice-president; L. F. Ohland, treasurer; Britt Webb, secretary.

Joseph Judge, who served with the Pope company since the bicycle days and who for the last three years has been manager of the Mogul Auto Co. in Newburgh, N. Y., has entered the trade for himself; he has secured the distribution of Ford and Reo cars in Rockland county and will maintain headquarters in Spring Valley and a branch establishment in Haverstraw.

C. A. Norton has sold the Buick Garage, at 135-37 Farmers avenue, Kalamazoo, Mich., to G. J. Coffey and R. A. Coffey; G. J. Coffey formerly was connected with the William Locher Sporting Goods Store, and R. A. Coffey formerly was with the Buckley-Kalamazoo Foundry & Machine Co.

The Iowa Motor Sales Co. has been formed in Des Moines, Ia., to act as distributer of Velie cars in Central Iowa; N. A. Cruzan, who previously has been a dealer, is manager of the new company, which has located at 909 Walnut street.

W. H. Drinkern, of Beloit, Kan., has purchased a partially completed garage which was started by W. H. Knarr and on which work was stopped by Knarr's death; when the building is completed it will be occupied by W. C. Brown.

Plynn Lyman, of Greenville, Mich., has purchased a half interest in the implement and vehicle business of Chris Hansen; the firm style will be Hansen & Lyman and trucks and cars will be added to the company's stock.

C. E. Tait, formerly of Concord township, Ohio, has entered the trade in Springfield, in the same State; he has purchased the Motorfix, on West Water street, and will operate it under the style Auto Inn.

John A. Dowsett, of Oneonta, N. Y., has sold his blacksmith-shop on Market street to Andrew J. and I. Jay Bookout; they have leased it to A. E. Oliver, who has opened up as a garageman and repairman.

J. M. Weaver, who has been connected with the trade in Utica, N. Y., for some time, has formed the National Stubs Motor Sales Co. in Syracuse; he has located at 698 South Salina street.

Elmer Salzmann has taken over the interests of his partner, John Harms, in the garage firm of Harms & Salzmann, in Highland, Wis. Harms contemplates entering the trade on his own account, both as a garageman and dealer.

Sidney Raymond, of North Crandon, Wis., has purchased the Carter Bros. Garage in Crandon, in the same State; he also has secured additional real estate and will enlarge the building.

Torrence & Wilcox, formerly of Jackson, Mich., have secured control of the Hayner Bros. Garage in Mason, in the same State; they have removed with their families from Jackson to Mason.

Fred Fiske has sold his interest in the Grand Traverse Auto Co., of Traverse City, Mich., to O. A. Thompson; Thompson and the other owner, M. D. Bryant, will continue the business.

The Queen City Garage & Repair Co. has succeeded to the business of the Model Garage in Cincinnati, O.; it is located at 21 East 9th street. L. W. Ross is manager of the new company.

Charles Krull and F. A. Stegeman, formerly of Hope, Kan., have opened a garage in Bakersfield, Cal., at 1020 19th street; they also will handle Maxwell cars in Kern county.

Joseph H. Schroeder, of St. Louis, has been granted permission to operate a garage; he will locate in a one-story brick building at 1110-20 North 12th street.

Peters & Gresslin, garagemen and dealers in Ackley, Ia., have dissolved partnership; Gresslin has sold his interest to Peters, who will continue the business.

Charles Bayart has entered the garage trade in New York City on West 66th street; formerly he was connected with the Renault Selling Branch, Inc.

E. G. Kading, of Adair, Mo., has purchased the Cushman Garage; he will continue the business with Claude O. Dutro, of Gorin, Mo., as a partner.

Charles Hathorn, of Mason City, Ia., has disposed of his interest in the Hathorn Garage to his brother, W. H. Hathorn; it is located on 5th street.

George and Perry Ashcraft, of Medford, Ore., have formed a partnership and have taken over the Medford Garage; they will continue the business.

T. J. Walton has opened a repair-shop in St. Louis, Mo., at 2007 Locust street; he formerly was superintendent of the police department's garage.

C. R. Yanington, formerly of Centralia, Mo., plans to enter the garage trade in Stockdale, Tex. He will locate in the V. R. Knox building.

F. F. Chesak, Fred Lonsdorf and Frank Hubing have formed the Athens (Wis.) Automobile Co. They plan to erect a garage, 40 x 68 feet.

William F. Baker, of Milford, Mass., has formed a company and will open a garage; a building costing $10,000 will be erected on School street.

Clifford Cadron is about to open a repair-shop in De Witt, Ia. He has leased a new building located at the rear of the Emmert Garage.

Albert Downing, formerly of Ann Arbor, Mich., and George C. Rolfe, formerly of Apthorp, N. H., plan to open a garage in Littleton, N. H.

W. H. Murphy is building a garage, 36 x 70 feet, in Fox Lake, Wis.; when it is completed he will operate it and will handle two lines of cars.

F. W. Moore, of Floresville, Tex., has sold his garage to S. V. Houston. J. H.

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Mayes has purchased Moore's automobile agency.

Charles Thompson and Jesse Brenner are about to open a garage in Ferndale, Cal. The equipment will include a vulcanizing plant.

L. M. Neher has purchased the Warsaw (O.) Auto Co.'s garage; he also owns and operates a garage in Milford, in the same State.

J. R. Atwood and Charles Jackson have entered the trade in Nevinville, Ia. They will operate under the style Atwood Motor Co.

B. E. Bauer has retired from the Elroy (Wis.) Garage & Machine Works; R. E. Gibbens is now sole owner of the business.

A. P. & L. A. Yorton have opened salesrooms and a repair-shop in Three Rivers, Mich. They are located at 125 Main street.

Jules Gerard, of Green Bay, Wis., has sold his garage and agency to the Green Bay Motor Car Co. He handled Cadillacs.

The Hazelton (Pa.) Vulcanizing Works has been purchased by Vith Bros., of West Hazelton; they will operate the business.

Alexander Goldberg, of Germantown, Pa., has taken over the Rittenhouse Garage; it is located at 216 West Rittenhouse street.

George A. Herring, of Kearney, Neb., has taken over the Kearney Automobile Co. Possession was given immediately.

The Pioneer Garage, in Newman, Cal., has been purchased by Sidney Bell, of Crows' Landing, in the same State.

H. E. McCrea has purchased an interest in the Circle City Garage Co., of Corona, Cal. He will manage the business.

R. P. Ewing, of Spencer, Ia., has sold his garage to William Peterson, formerly of Hartley, in the same State.

C. F. and C. B. Rizer have entered the trade in Olar, S. C. They will sell cars and accessories.

Martin & Hodgin, of Winchester, Ky., have secured a site and will erect a garage and repair-shop.

Hiram Weaver has entered the trade in Rutland, Vt. He has the Ford and Buick agencies.

E. W. Preston has opened a garage in Campbell, Cal. It is located on Campbell avenue.

Theodore Baer has opened a garage in Peekskill, N. Y. It is located on Highland avenue.

H. D. Gorby has opened a garage in Pasadena, Cal. It is located at 29 South Lake avenue.

Charles Kim, of Taft, Cal., plans to open a garage in Bakersfield, in the same State.

The garage of Toburen Bros., in Champaign, Ill., has been sold to Christy Bros.

DURKEE SAYS THAT PYRENE DID NOT TREAT HIM RIGHT

Claims Fire Extinguisher Maker Broke Contract—Demands $11,000, Part on an Old Deal—How Distributer Figures the Total.

Despite the fact that Joseph W. Durkee, of Brooklyn, was empowered to sell Pyrene fire extinguishers in the whole United States with the exception of one or two comparatively small sections and had unlimited maritime selling rights. he does not appear to have enjoyed the most amiable relations with this manufacturer; at any rate, he has filed suit in the United States District Court for the Southern District of New York against the Pyrene Mfg. Co., of New York City, asking damages of $11,-288.10.

Durkee and the Pyrene company have had differences before. Some time ago the company claimed he was infringing a patent under which the extinguishers are manufactured and suit was instituted against him in the Federal court; this, however, was settled. By the terms of settlement Durkee was to receive $2,500 in cash and $2,500 through an extra 10 per cent. which he was to receive in addition to a regular percentage as a distributer of the company's product.

The selling contract held by Durkee provided renewal terms and the contract was once renewed. When it came time to renew again, however, a hitch developed and both sides claimed a grievance. The company claimed he should have renewed and Durkee claimed certain actions of the company made it impossible or inadvisable for him again to take up the selling rights.

When it seemed impossible to effect a settlement Durkee filed his suit; $10,000 of the amount he asks is for damages alleged to have been sustained through the Pyrene company's acts. The remaining $1,-288.10 he claims is part of the second $2,500, which he has not yet secured through the extra 10 per cent. commission.

Minor Business Troubles.

Wallace S. Todd, trading as Todd & Todd, automobile repairers, at 234 West 108th street, New York City, has assigned for the benefit of his creditors; the assignee is David L. Ostro.

Frank Calcarco, who operated an automobile transportation line between Waterloo and Seneca Falls and Cayuga Lake park, N. Y., has been declared a bankrupt; his creditors will hold their first meeting November 29.

A petition in bankruptcy has been filed against Charles E. Ball, Inc., a supply dealer in Newark, N. J., at 283 Halsey street; the petitioner was George Furst, representing the Hartford Suspension Co. Liabilities are $4,000 and assets $1,221.

The garage of the Reimers Motor Car Co., of Louisville, Ky., has been sold by a referee in bankruptcy to Rommel Bros. for $10,200, which is approximately the amount of a mortgage held against the company's property by the bidder. The company operated at Baxter street and Broadway.

Changes Among Prominent Tradesmen.

E. S. Jordan, former advertising manager of the Thomas B. Jeffery Co., of Kenosha, Wis., has been promoted to the post of general sales manager to fill the vacancy caused by the resignation of Harry E. Field. H. C. Hill will be his right-hand man, with the title of assistant general sales manager.

Edward A. Cassidy, formerly of Petry-Cassidy, Inc., of Philadelphia, has been appointed sales manager of the automobile accessory division of the H. W. Johns-Manville Co., of New York. He, of course, will remove from Philadelphia and make his headquarters in the big 12-story J-M building at Madison avenue and 41st street, New York.

F. W. Thatcher has been promoted to the management of the Firestone Tire & Rubber Co.'s branch in Memphis, Tenn. Previously, and for several years, he was one of the Firestone salesmen, attached to the Detroit office; previous to that he had been connected with the Warren and Winton companies. He is clean-cut and energetic and likely to make has influence felt in the South.

Recent Losses by Fire.

Winston-Salem, N. C.—J. L. Gilmer; garage destroyed. Loss not stated.

Reading, Pa.—F. H. Probst, South 18th street; garage destroyed. Loss not stated.

Coshocton, O.—Standard Automobile Co.; garage roof collapsed under weight of snow; 30 cars damaged. Loss, $7,000.

Stephenson's Assets Exceed Liabilities.

Schedules in bankruptcy filed by the Stephenson Motor Truck Co., of Milwaukee, which failed on October 23rd last, discloses excess assets of $22,000. The total liabilities, as scheduled, were but $15,576.77 and the assets $37,306.83.

Nationalizing the Chamber of Commerce.

The Automobile Chamber of Commerce has filed the customary application with the Supreme Court of New York for permission to change its title to the National Chamber of Commerce, Inc. The application is due to be heard on December 15th.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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DISENCHANTMENT OF THE CYCLECAR.

How "distance lends enchantment to the view" never was better illustrated than by the cyclecar. For all of a year, several industrious individuals in this country have written about it until it has been made appear "a thing of beauty and a joy forever," from any and all standpoints, most of this press-agentry being predicated on the alleged unbounded success of the cyclecar abroad, in Great Britain particularly.

Returning from Europe several months ago, even so shrewd and far-seeing a man as John N. Willys laughed at the cyclecar. In plain language, he described it as "a joke" and indicated quite clearly that its importance abroad was being exaggerated. Similarly, Motor World has time and again declared that it was a case of distance-enchantment.

When the British engineers, who were the guests of the Society of Automobile Engineers, were here last June, they said as much, and were so quoted in Motor World, all of which prepared the way for the real lifting of the curtain. For the truth is coming out and the fact is being made plain that, far from being a grand, gorgeous, glittering success, the faith of even the British public in the cyclecar "has been hopelessly shaken." This admission is made in the course of an almost tearful article appearing in the Cycle and Motor-Cycle Trader, one of the most conservative of the British trade publications, and written by a member of its editorial staff. Read it:

"I am not surprised to observe that something in the nature of consternation is affecting the advocates of the cyclecar movement and not without reason. The trend of affairs is certainly most discouraging to believers in the simple little vehicle built on motorcycle practice, for the sufficient reason that it has been tried and found wanting in many respects. The great majority have proved to be noisy rattle-trap affairs that shed their parts on the highway and are a source of endless trouble and expense to the unfortunate owners. Consequently the faith of the public has been hopelessly shaken at the very inception of the new movement. . . . While the cyclecar, therefore, has made very little progress, and it even may be said that the trend is now retrograde, the light car is going ahead by leaps and bounds."

If "consternation" reigns in England, where good roads are the rule, and "the trend of affairs is certainly most discouraging" and "the faith of the public has been hopelessly shaken," what will happen in this country of poor roads if ever the cyclecar obtains more than a press-agent start?

The answer is as plain as a pikestaff and should serve to make clearer why Motor World has consistently advised against the cyclecar and urged utmost caution in its promotion and purchase. It would be much easier for us to "play" for a share of the cyclecar money by lending our pages to the painting of glowing pictures, but with necessity for "toothpick construction," as one big manufacturer dubbed it, and with the impracticability of the narrow gauge cyclecar so distinctly defined, financial disaster is so plainly invited, if not foreshadowed, that we would be false to our conception of conserving the interests of the trade and of the duties of a trade journal did we not endeavor to point out the pitfall and display the danger signal over it. We are content to believe that those whose enthusiasm will not permit them to see it will rue the day when they count the cost as their foreign compeers now are counting it.

DISTRESS THAT PROVED PROFITABLE.

Now that the price of gasolene is toppling from its high estate, it would at least prove diverting to hear from all those wise gentlemen who, a year or so ago, dug deep into the bowels of the earth for figures to prove how truly terrifying was the shortage of the precious fluid.

The most remarkable feature of the situation, and the one which, as Motor World remarked at the time, indicated that the shortage was largely "manufactured," consisted of the continued payment of almost unholy dividends by the large oil producing corporations. Real shortages usually reflect their effects in balance sheets but despite the shrinking oil supply, to say nothing of the dissolution of the Standard Oil Co. by order of the government, expert tabulators have just presented figures to show that during this year of great distress, the dissolved companies have more than doubled their profits—111 per cent. as against 52 per cent. Dividends to the value of $111,000,000 already have been disbursed while several counties are still to be heard from. Who would not undergo distress for such a return?

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DEER REELECTED PRESIDENT OF N. Y. STATE ASSOCIATION

Parsons Also Retained as Treasurer, but All Other Officers Are New —Resolutions Favoring Two Laws Are Adopted.

At the third annual convention of the New York State Automobile Association, which was held in Troy, N. Y., during Wednesday and Thursday last, 19th and 20th inst., President A. J. Deer of Hornell and Treasurer Fay C. Parsons of Cortland were unanimously reelected. All of the other officers, however, are new men, as follows: First vice-president, Frank M. Baucus of Troy (vice H. G. Strong of Rochester); second vice-president, John M. Ross of Utica (vice Howard Martin of Albany); third vice-president, W. W. Smith, of Johnstown (vice A. B. Maynard of Utica); acting secretary, Robert S. Ross of Albany (vice Frank D. Lyon of Albany).

The business sessions were held in the Y. M. C. A. Hall with President Baucus of the Troy Automobile Club in the chair, and during the course of the first session it was brought out that the membership has increased very materially during the past year. Dr. H. F. Meinhart, of Kingston, who is chairman of the membership committee, reported that there are at present 14,611 members enrolled, representing an increase of 2,453 over 1912. The treasurer's report revealed that during the year the receipts amounted to $9,304.52, of which $7,183.33 came from 62 affiliated clubs; the payments amounted to $8,193.33, leaving a balance in the treasury of $1,111.19.

Among the more important business that was transacted, the association placed itself on record as favoring the passage of a law that would make compulsory the carrying of tail lamps by all vehicles. At the same time, the resolution requesting the legislative committee to urge the passage of a law compelling railroads to place warning signs at least 300 feet from dangerous crossings was approved. It was proposed to change the time of the annual convention to the month of August, but the proposition did not meet with general approval and was dropped.

During the Thursday morning meeting and after urgent invitations from Watertown and Poughkeepsie had been read and discussed, the latter city was unanimously chosen for the fourth annual convention.

Before adjournment, President Deer made the following appointments: Chairman of the good roads committee, George C. Diehl, of Buffalo; chairman of law and legislative committee, Melvin Bender, of Albany; chairman of membership committee, Dr. H. F. Meinhart, of Kingston; chairman of the auditing committee, M. E. Gregory, of Corning. The convention was brought to a close with an automobile parade during the afternoon and a banquet at the Hotel Rensselaer in the evening.



*Indicates Sanction by A. A. A.

Dec. 1-2-3, Richmond, Va.—Annual meeting of the American Automobile Association.

Dec. 3-4-5, New York City—Motor Dealers' Contest Association's 500-mile reliability contest.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan. 17-24, Pittsburgh, Pa.—Automobile Dealers' Association's annual show.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 7-12, Seattle, Wash.—Annual show in State Armory.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 22-March 1, Hartford, Conn.—Automobile Dealers' Association's show in Park Casino.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Association's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

Pittsburghers Drive Over Dynamite.

Grant boulevard, one of Pittsburgh's most popular automobile drives, has been a dangerous place for three weeks, and the motorists of that city didn't know it until that time had elapsed; the police state that in less than a month they have picked up 120 sticks of dynamite which had been scattered systematically along the highway. They have arrested Herman Leidman on a charge of robbing a contractor's magazine, from which they claimed the dynamite was stolen.

Certificate No. 1 for President Wilson.

Contributor's Certificate No. 1 of the Lincoln Highway Association has been issued to President Woodrow Wilson, which not merely means that the President has contributed $5 to the gigantic project but is evidence of his sympathy therewith.

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MOTOR LAW DOCTORS SEEK UNIFORM VEHICLE RULES

Representatives of Seven States Appoint Committee to Draft New Regulations for All—Existing Laws Called "Rotten."

Growing out of the adoption in March last of resolutions by the New Jersey legislature authorizing the appointment of three commissioners to confer with commissioners to be appointed by other States in an endeavor to bring order out of the chaotic condition of motor vehicle legislation, the Uniform Motor Vehicle Legislation Commission held its first session on Friday last, 21st inst., and before the meeting was brought to a close another start had been made to give impetus to the movement which several times before has been started but which always has petered out before it reached anywhere.

If the efforts of the present commission bear the kind of fruit that is hoped for, existing motor vehicle legislation in 11 States will be wiped clean off the slate and in its place there will be substituted new laws, or rather one new uniform law, based primarily on the common law of the highways.

Although it was intended that 11 States be represented at the gathering, and invitations had been issued to their representative to be present, only seven States sent delegates—Maine, New Hampshire, Vermont and Rhode Island being unrepresented. The States that were represented and those that represented them are as follows, the list including also the more important of the invited guests:

A. J. Deer, president of the New York State Automobile Association; Fay C. Parsons, secretary of the same organization; Samuel W. Taylor, who is head of the New York Commission and editor of "Rider and Driver," and William Phelps Eno, representing New York; Col. W. D. Sohier, chairman of the Massachusetts Highway Commission, representing Massachusetts; Charles J .Bennet, Commissioner of Highways; Alfred Phillips, Secretary of State, and A. H. Terry, City Engineer, of Bridgeport, representing Connecticut; E. M. Bigelow, Highway Commissioner, and Robert P. Hooper, president of the Pennsylvania Motor Federation, representing Pennsylvania; Chas. S. Guyer and L. D. Townsend, Jr., representing Delaware; Col. Edwin A. Stevens, Commissioner of Highways; Harry A. Roe, Commissioner of Motor Vehicles, and George L. Burton, representing New Jersey; Dr. H. M. Rowe, president of the Automobile Club of Maryland, and H. M. Luzius, its secretary representing Maryland.

After the appointment of Samuel W. Taylor, who is head of the New York Commission, as chairman of the joint body, the study of ways and means to effect the passage of uniform legislation was commenced. As a basis for the discussion, which at times became very long drawn out and involved many minor questions which had no direct bearing on the business in hand, the New Jersey commissioners had compiled and presented to the meeting a careful resume of the motor vehicle laws of all 11 States represented, showing wherein they differ and wherein their most conspicuous differences appear.

At the outset it became apparent that the commissioners were inclined to view the proceedings in a friendly spirit, and it was agreed with scarcely any exceptions that where differences appeared in the laws of the various States, they could be reconciled and uniformity of both phrase and intent obtained by concerted action. The sub-divisions that were discussed included fees, registration, computation of horsepower, drivers' licenses, penalties for the infringement of the laws, the indorsement of records of conviction of violations on licenses, and speed regulations.

In the end it was decided that the whole matter might better be thrashed out by a committee appointed for the purpose, and of those who attended Sohier, Phillips, Bigelow, Townsend, Roe and Burton were appointed to serve in this capacity; Taylor was made ex-officio chairman of the committee. It is the duty of the committee to consider the resume provided by the New Jersey commissioners and to draft a new set of State-wide traffic rules based primarily upon the common law of the road. Just when the committee will report has not been decided; it was to have reported this week, but it was found necessary to put the meeting over, probably until some time next week.

Of those who spoke at length against existing legislation in the concrete and against the marvellous differences in legislation in the various State, W. P. Eno, representing the National Civic Federation, and Charles Thaddeus Terry, of the American Automobile Association, occupied the most time, and both were accorded "round hands" at the conclusion of their respective efforts. In drawing attention to the necessity for simple, uniform rules and regulations for all vehicular traffic, Eno stated, in practically as many words, that all existing legislation is "rotten" and that it ought to be abolished, for, he pointed out, it is entirely possible for the owner or operator of a car to comply with the laws of one State and to travel five miles and be liable to fine and imprisonment for operating his car in exactly the same manner in another State.

In addition to endorsing the views of Eno, Terry also came out strongly for the complete abolishment of class legislation in all its forms and the substitution of a new law which will control both motor vehicles and every form of vehicular traffic.

In the new law which is being drafted by the committee appointed for the work it is proposed to incorporate a clause completely wiping out all existing laws relating to vehicular traffic of every nature; a second clause declaring and affirming the principles of the common law of the road also will be incorporated in it. One other respect in which the new measure will differ essentially from existing measures is that it will provide for the elimination of speed limits and all of the various forms of double taxation to which the motorists of some States now are subjected.

Extra! Here's Spooner's Cyclecar Club.

Having caused a lot of people to become excited over cyclecars, and inspired not a few of them to lay plans for engaging in their manufacture, F. Ed Spooner, by far the most prolific of the cyclecar press agents, has formed the Detroit Cyclecar and Motorette Club, of which, quite naturally, he has been elected president. The club was organized at a meeting held last week in the Pontchartrain Hotel in Detroit, in which city, according to Spooner, there are now 31 cyclecar companies actually building or organizing to meet the demand.

Apart from Spooner, the other officers are: J. P. LaVigne, LaVigne Cyclecar Co., first vice-president; J. J. Batterman, the Scripps-Booth Cyclecar Co., second vice-president; C. F. Gazeley, Detroit Commercial Axle Co., third vice-president; I. N. White, Princess Cyclecar Co., fourth vice-president; P. A. Teats, "P. E. T." Cyclecar Co., secretary; R. C. Albertus, Mercury Cyclecar Co., treasurer. These officers, with the following, will comprise the board of directors: K. L. Herrmann, Herrmann Cyclecar Co.; W. J. Marshall, Mercury Cyclecar Co.; Ernest Weigold, Detroit Cyclecar Co.; J. F. Wilkinson, Wilkinson Starter Co.; S. A. Clinton, Detroit Cyclecar Co.; James Scripps Booth, Scripps-Booth Cyclecar Co.; A. J. Farmer, Farmer Mfg. Co.; Theodore F. Millington, Detroit Body Co.; H. S. Baker, Hinchman & Baker, and P. Heseltine, Gadabout Motor Co.

The next number on the indefatigable Spooner's program is the organization of an association to assist the spenders—the "good fellows" of the trade who made money but failed to save any and who therefore may be bumping the bumps on the financial toboggan.

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TIME CARDS SHOP ESSENTIAL

Why It Is Necessary to Know What a Man Does and How Long It Takes—Little Items That Injure Customer and Proprietor.

The statement that "time is money" has been made so often that it has lost much of its significance. Nevertheless, it is literally true in the garage and repair business—just as it is true in any business.

Time is the important element. Time represents labor. When a ticket for repair work is made out usually time is the largest item on that ticket. This would seem to suggest that it is well worth keeping track of in the most careful and exact fashion.

Notwithstanding this fact, time is not, generally speaking, as carefully looked after as it should be. If money is handled there is little doubt about the honesty of the average employe. He can be trusted. Also there is usually a check on money matters that would sooner or later bring any dishonesty to light. But with the handling of time the matter is seemingly regarded in a different light. There is no check, as a rule, consequently there is a great deal of unintentional dishonesty.

Both Proprietor and Customer Suffer.

Who suffers? The customer suffers and the proprietor suffers. The customer often feels that he is getting "soaked" and it is often true. The customer frequently pays for time that is never consumed on his work.

Why is it? The answer is that this condition exists largely because of indifferent and inexact methods of keeping track of time. Fifteen minutes in the average customer's bill represents 15 cents. With four or five men working on a job and each of them losing 15 or 20 minutes on it, the waste mounts up and what is a reasonable charge if just the time used were to be paid for becomes unreasonable and excessive.

A few days ago a motorist was in a garage waiting for his car The job was supposed to take about half an hour. It took two hours, and while he was waiting the motorist observed that the man working on his job was taken off it three distinct times—once to help carry a body which was being dismounted to be replaced by a coupe; once when another customer came in and wanted something done that "only took a few minutes," and once to shift a car out of the way. All together, the time consumed this way was over half an hour.

Daily Time Cards for Men the Remedy.

His bill called for two hours' labor. And he paid for it. But he wondered how much time he would pay for that he did not get if perchance he should have a big job in that shop. The remedy is a daily time card for each man that will keep track of his expenditures of time in units of 15 minutes or less. That would be an improvement. And, of course, there are other measures that will suggest themselves to the garage employer who is keen on having things paid for by the customer for whom the work is done.

There is a stock answer, "The matter is as broad as it is long"—what we give to one customer is just as likely to be given another." That is not the reply of efficiency. It is the excuse of the man who does not go to the bottom of things and who is not intent on exact houesty. The matter is worth much study, and dealers who have solved it satisfactorily are invited to contribute their findings to other dealers through the columns of Motor World.

LETTERS AS AN INDICATION OF CHARACTER OF BUSINESS

"The letters you write asking for business are the most important letters that leave your office," says a paper manufacturer in "boosting" his wares, and apart from his reference to his own product his assertions contain a point that is of genuine interest and importance to every business man.

"A scientific investigation has recently been made which proved beyond peradventure that the character of the paper used has very great influence on the effectiveness of letters asking for business," he continues, enunciating a truth that deserves more attention than it gets.

"Especially has this investigation shown that the thickness of the paper and the distinctiveness of its surface have a marked effect on the results obtained from sales-letters. As a man reads your letter, he thinks of what you say, but he feels the way you say it and he forms his judgment of you and your goods or service from the appearance and 'feel' of the paper on which your letter is written."

"THE VOICE WITHOUT SMILE" AND THE CUSTOMER IT LOST

"A certain textile house in this city lost a $3,500 order yesterday through a display of bad telephone manners on the part of the girl in charge of the house switchboard," says the New York Times. "According to the buyer, he called up this house rather early in the business morning and asked to speak to the manager.

"The girl had evidently been instructed to take the names of persons calling but had not been told how to do it. Instead of asking, 'May I have your name?' or 'Who is speaking, please?' she demanded sharply, 'Who are you?' To this the buyer answered, 'I'm a man who is through buying from your house as long as you are there.' He said he was not going to ask her discharge, but that he was going to buy somewhere else until the house got a girl who knew that 'the voice with the smile wins.'"

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AWAKE N DISING WORLD

LATE BILLS MEAN LATE PAY

Statements Which Do Not Go Out on Time Often Responsible for Sluggish Business—A Bookkeeper Who Was Not an Asset.

Do your bills go out promptly? Do your statements go out with clock-like regularity on the last day of each month? So that the morning of the first the customer gets them along with his other bills and includes them in his plans for payment. Or do they go out somewhere between the first and the twentieth, so that the customer who gets them holds them to include with the following month's payments? You ought to know this, if you don't. And if you follow the experience of a successful dealer in Indiana you will be sure—very sure—to see that the night of the last day of the month sees a statement for current indebtedness go to every customer who ought to have one.

Found Out Why Money Came Slow.

This dealer formerly had a bookkeeper who did things just about as he felt inclined. If there was a chance to put anything off for a few days he put it off. Cash was slow in coming in and the "boss" did not know the reason why. His customers were good people who had been doing business with him for some time. They had always paid promptly, but now they were getting slow. Almost everyone was taking from 30 to 60 days. One day he solved the problem. A customer came in and when he paid his bill remarked, "You could just as well have had this a little sooner. Why on earth don't you send out your statements earlier in the month? I just got mine a few days ago."

It was the 23rd day of the month. Investigation of the bookkeeper's methods followed, with the result that very shortly thereafter a new bookkeeper was installed. Part of the understanding that the new one subscribed to was that bills were to go out immediately on completion of jobs or delivery of supplies, and that in no case were statements to be delayed beyond the first day of each month.

It was only a small point, but the carrying out of this idea has helped wonderfully in securing prompt payment of bills.

The psychology of it is very simple. Send your statements out late and the customer naturally thinks "This man is not in very much of a hurry. I will just let him wait." But when a bill follows the job quick and the statement comes promptly on the first the recipient naturally feels, "These people mean business; they are right on the dot. Guess I better send 'em a check and keep my credit good."

SALESMEN—SO-CALLED—WHO INVITE LOSS OF PROFITS

It does not require a salesman to sell an article at a cut price. Almost anyone can do it. The salesman is the man who sells an article at a profit.

There are men selling cars whose whole thought is that the purchaser is looking for something a little bit cheaper. Often perfectly good prospects are frightened away by these men. They suspect something is wrong because they see at once that all the salesman is thinking of is price.

"How much is that car?" asked a gentleman of one of these so-called salesmen.

"Eight hundred dollars, but, between you and me, I think you can buy it for considerably less," was the reply.

A cut in prices was not asked for by the visitor, nor did he expect it. He sold his own goods at the regular price and had followed that method for years. To him a "cut" was equal to a "keep-off" sign. He immediately lost confidence in the salesman and, after asking one or two questions about other cars, beat a hasty retreat.

Is it any wonder that the dealer whose men are not better trained than this has a liberal—far too liberal—stock of used cars on hand?

Many dealers could make money by watching the selling methods of their men and strengthening them where they are weak. Star players are usually the product of careful coaching.

TWO WAYS OF MAKING USE OF HELPFUL SUGGESTIONS

Keep your mind open.

The difference between the live ones and the dead one is the open mind.

The live one does not think that whoever has been in the automobile business for ten years has all the knowledge of that business locked up in his cranium.

He realizes that business, at the bottom, at the base, is all the same. That his business is very much like that of the hardware man, the piano man, the drygoods man and every other merchant who is in business to sell goods at a profit. The dead one thinks his business is peculiar or different. "What you say is all right for Bill Jones; he's in hardware, but it would never work with me. I'm in the automobile business."

And he decides against it before he has tried it or before he has even given the idea serious thought.

The live one "mulls the idea over." The suggestion made does not fit exactly as presented. But how can it be made to fit? Presto! With a few changes the idea is just as practical in selling automobiles as in drygoods. Let's try it.

The live one tries it. He goes at it seriously, enthusiastically, hopefully. He is sure it will win. But he lays every detail of his plan carefully. Like a careful carpenter, he lays all the pieces together and fits them closely before he uses the glue and the screws. When he gets through his plan is a real plan. Every detail is complete. He puts it through successfully.

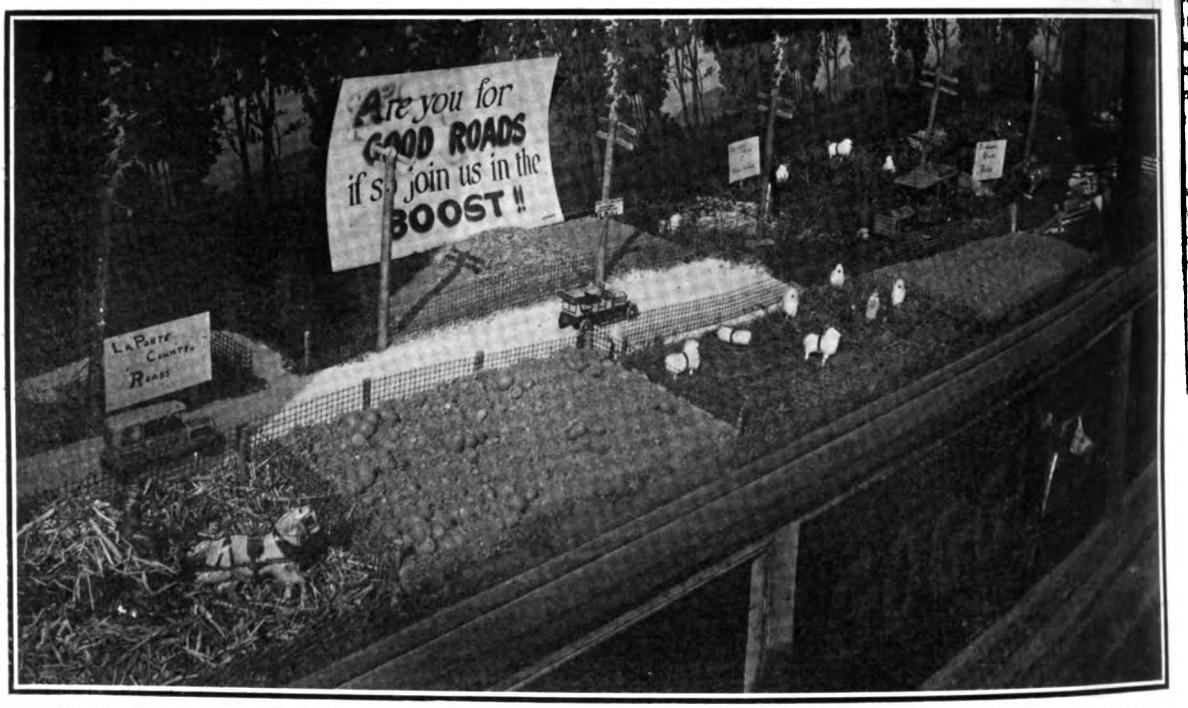
He is keen for suggestions. He analyzes, compares, thinks.

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GOOD ROADS WORK "BOOSTED" BY CLEVER WINDOW DISPLAY

Object Lesson with Sharp Point Created by a South Bend Dealer—Miniature Landscape as Attractive as it is Instructive.

Whether or not it is good business policy to go to a whole lot of trouble to rig up a window display that does not directly advertise the cars sold inside, is a question that does not seem to have bothered the 20th Century Motor Car and Supply Co., of South Bend, Ind., in the least. If the matter received any consideration from a selfish point of view they probably figured that while they probably would sell no cars as a direct result of the display, they would certainly help to better the conditdions that most affect the use of automobiles—which is to say, road conditions—and by so doing give the automobile industry as a whole a "boost" and ultimately profit by the uplift.



STRIKING "GOOD ROADS" WINDOW DISPLAY OF THE 20TH CENTURY MOTOR CAR AND SUPPLY CO., OF SOUTH BEND, IND.

The window display that may or may not have brought up this question is shown in the accompanying illustration. It does not require much concentration to perceive that the object is to "boost" good roads by making odious comparisons—the "odious" applying to the poor highways, of course, and being reflected upon those who permit them to exist. The 20th Century people have devoted their window to a bit of miniature landscape gardening that is positively artistic, and is carried out with such attention to detail that it looks like the real thing viewed through reversed opera glasses. The feature of the display is the comparison made between the good piece of road, which represents the notably good roads of Laporte County, Ind., and the bad stretch, which represents any old bad road. And while cars are bowling merrily along the smooth stretch—that is to say, they are supposed to be "bowling merrily"—a car, less fortunate, is seen mired over at the right and in process of being hauled out by a farmer with a team of horses. The juxtaposition of the two typical conditions speaks loudly and positively for itself.

Conditions on the roads are reflected by the farms, there being abundant signs of "peace and plenty" along the good road, while barrenness and a general air of neglect are in evidence near where the farmer and his horses are giving first aid to the mired.

The display is one that makes people stop and look; it teaches its lesson at a glance and probably does it far better than a lot of dry statistics, however valuable and necessary the statistics may be from a practical point of view. And there can be no doubt that the 20th Century company will benefit more or less indirectly by the attention attracted to the place, without waiting for the full fruition of the movement in which it is taking part.

Automobile Vanquishes Locomotive.

So many automobiles have come to grief in front of railroad engines that motorists in Beaumont, Tex., are congratulating R. E. Ligon upon having literally chased a train off the track when it tried to run over him.

The train may have had a right to the crossing, but it was too late to arbitrate when both engineer and Ligon discovered their predicament. If Ligon went straight ahead the engine would probably hit him and the engineer could not stop; Ligon turned sharply to the right and ran down the tracks ahead of the train. The locomotive might have "got him" at that, had not the automobile collided with a switch lever, the collision opening the switch, and sent the train off the tracks. The engineer stopped then and managed to save the train from a bad wreck. Ligon's car was not badly damaged and he drove away while the wreckers were summoned.

German Consul Objects to License Tax.

If you don't want to pay an automobile license, get a job as consul for some foreign country. F. Kopp, German consul-general of San Francisco, has asked that his automobile be exempted from taxation because a German-American treaty exempts German government officials from paying personal property taxes in America.

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ROFFY ELECTRIC HEADLIGHT PROJECTS GLARELESS BEAM

Throws Sharply Defined and Powerful Light but Isn't Much Bigger Than a Side Lamp — It's All in the Lens System.

One of the natural lines of development of the automobile and its parts and accessories lies in the direction of concentration of useful energy and the elimination of superfluous bulk and weight. Results of such tendencies are visible in many details of the modern car, and though in many instances the effects are marked, it is not often that they are as pronounced as in the case of the lamp shown in the accompanying illustration—the Roffy lamp, made by the Roffy-Grace Corporation, of 1926 Broadway, New York.

While daylight demonstration of an automobile lamp cannot be expected to bring out all its best points, a daylight demonstration of the Roffy lamp made for a Motor World man made clear several things claimed by the makers. In the first place the beam of light thrown by the lamp is highly concentrated, like that of a stereopticon, and the edge of the disk of light is perfectly sharp—there is no diffusion of more or less faint light outside the beam. Standing in front of a Roffy lamp at any distance, it is impossible to see the light from the projecting lens without actually getting the eye within the sharply outlined circle. And in the second place, all the illuminated area in the disk is perfectly even, there being no dark rings or areas of variation of illumination even at the extreme range of the lamp. The beam of light is projected slightly downward, but the angle is so calculated that its upper edge nowhere is much more than four feet above the ground. Thus a man walking in the road toward a car fitted with the Rogy lamps would see nothing of the cencentrated pencil of light, his eyes being above it, though of course he could see the illuminated area ahead of the car.

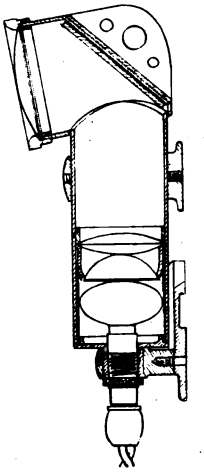
Because the light is low down and is not diffused it is said by the makers to pass muster within city limits without dimming. Cars with Roffy lights have been driven in the city limits without molestation from the motorcycle or other police until, according to Roffy, the car has been stopped a number of times to ask the police if the lights were objectionable in any way. While seemingly puzzled as to just why the lights should be objectionable, as they evidently were bright enough, the "cops" could find no fault with them.

In the construction of the lamp, which just has been placed on the market, Roffy has gone somewhat deeply into the science of optics and has worked out a lens combination that makes possible the results sought. The accompanying cross-section shows the arrangement clearly. The main body of the lamp is of tubular form and stands vertically. In the bottom is a special



ROFFY-GRACE HEADLAMPS

tungsten bulb of mushroom shape. Immediately above the bulb is a condensing lens, and above it a double combination projecting lens which throws the light on a French reflecting mirror set at the proper angle in the hood at the top. At the front of the hood is another lens—a plano-convex. While the combination of lenses seems somewhat complex, it is explained that such an arrangement is necessary in order to



LAMP AND LENS POSITION

obtain the desired results. In reality the complexitly is only apparent, for the lenses are fixtures and need no attention.

The lower part of the lamp body—that is, the part immediately surrounding the bulb—is open except for vertical bridges, and is filled with a short cylinder of ground glass. From this is given off a white diffused light that illuminates objects in the immediate vicinity of the front of the car; it is a soft light that is not in the least dazzling, and it can be moderated as much as may be desired by the employment of glass cylinders of the required density.

The two lamps of a pair can be turned so as to concentrate both beams at any desired distance ahead, if so desired, which, of course, greatly increases the illumination of a smaller area. With standard bulb equipment the light is sufficiently intense to illuminate the road for about a block and a half ahead of the car; and one of the results that Roffy states he sought and has obtained is that the quality of the light is such that objects are seen much more plainly than with other lights of greater actual intensity. In other words, it is not so much the quantity of the light as the quality that produces results.

While bulbs of various powers are supplied, the regular outfit, and the one that is recommended as giving the most satisfactory all-round results, has bulbs that consume 4 watts when the lamps are connected in parallel for running, and 2 watts when in series. With each pair of lamps is supplied a switch for making the change from parallel to series, the latter connection being employed when the car is standing and less light is needed. The lamps are attached to the radiator by means of special brackets and bolts, the brackets being so made as to do no harm to the radiator. Another model is designed to attach to the dashboard.

Taking the Hum Out of Rear Axles.

In view of the simplicity of adjusting the resonant hum out of the rear axles of cars that are a year or so out of date, it is a little bit surprising that so many owners put up with the trouble. In the majority of cases, the trouble can be cured with a wrench in about two shakes of the proverbial ram's tail. Also, in the majority of cases the maker of the axle, or his agent, gladly will make the adjustment without cost—which merely goes to prove how really simple the job is.

Tinning Terminals to Perfect Contact.

Tinning the terminals of cables or wires may help considerably to maintain good electrical contact, for the soft coating is easily scraped clean by the screwing down of fasteners and there is a good "bedding-down" action. The tinning can be accomplished by rubbing the terminals with any soldering flux and dipping them into solder.

Making Paper Serve as Emergency Funnel.

A derby hat with a hole punched in the crown can be used, and has been used, as a funnel; but a paper cone answers the purpose about as well, and there are not many emergencies when there isn't a piece of paper within reach.

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CITY HAS ABSOLUTE RIGHT TO NAME TAXICAB CHARGES

New York's Traffic Ordinance Upheld by Appellate Court—Even Goes so Far as to Say Cabmen Can Quit if They Don't Like it.

The rights of a city to its streets are absolute, according to a decision handed down last week by the Appellate Division of the Supreme Court, Second Department, in ruling upon the validity of the taxicab and hack stand ordinance which was to have gone into effect in New York City August 1 last. The opinion of the court dissolves an injunction secured against the enforcement of the ordinance and places all cab operators upon an equal footing.

The cab stands in front of clubs and hotels, which had been leased to the larger companies to the exclusion of the "little man," have been thrown open to all and the lower fares which the ordinance decreed have been made effective. The only way the cab men can avoid the ordinance is by having their cabs called to the hotels by telephone from a garage or similar location; that would enable them to avoid the law.

The big companies claimed the rates established were too low, in answer to which the court stated in substance that no one was compelling the companies to continue in business and that if they did not like the rates they had perfect liberty to quit business. It was held, also, that if a city has the right to rule taxicabs off the streets entirely it at least has the right to regulate their use and operation.

"The legislature intended to vest the board of aldermen with entire power to regulate the use of the streets of the City of New York, to regulate the nature of the vehicles that use the streets, and to prescribe the conditions upon which they shall be allowed within the city limits," said Justice Ingraham, "and with the unrestricted power to regulate the rates of fare to be charged by public conveyances using the streets. If any particular kind of vehicle in use in the city cannot be profitably operated at the rate of fare prescribed in the exercise of this power, the ordinance prescribing the rate of fare to be charged is not, I think, for that reason to be declared unreasonable or a violation of any provision of the Constitution or laws of the State. No one is bound to operate any particular kind of a vehicle or motor vehicle, and if the rate of fare fixed by the board of aldermen is not sufficient to allow motor vehicles to be operated in the streets of New York profitably, then the owners can cease from such operation. Nor does the fact that these motor vehicles had been operating in the streets under a license and at rates of fare that were profitable prevent the board of aldermen, in the exercise of the power vested in it by the legislature, from reducing the rates of fare. If vehicles were devised of such size and weight and propelled by power in such a way as to destroy the streets or prevent the use of streets by others, it seems to me that the board of aldermen would be justified in prohibiting the use of the vehicles of that class. If the legislature had the power to prohibit the use of any specified class of vehicles in the public streets, it had the power to delegate to the legislative body of the city the right to exercise that power. The Court of Appeals has lately determined that the legislature has that power."

Justice Scott write the following dissenting opinion:

"Under the former ordinance the hotel proprietor was able to exercise supervision and discipline over the cab stand in front of his hotel; he could see to it that only proper cabs stood there, and that only respectable drivers were employed, and that the existence of the cab stand did not interfere with the carrying on the business of the hotel, while under the present ordinance the cab stand will be opened to any licensed hack whose driver will choose to come there, and the proprietor of the hotel will be able to exercise no control or supervision whatever over either the cabs or their drivers. It is easy to see how a proprietor who was willing to have a special hack stand in front of his hotel, might well object to have a public hack stand established there. It may be safely assumed that at least in front of the larger hotels, the cab stands will be kept permanently filled up with waiting cabs, a new one moving up to take the place of each that leaves the stand. The practical effect of the ordinance will, therefore, be to keep waiting in front of each hotel, without the consent and against the will of the proprietor, a permanent line of hacks waiting and soliciting customers. In my opinion this would constitute an invasion of the abutter's property rights, which the law will not tolerate."

To Use Horns on Railroad Engines.

Because the locomotive whistles make too much noise and have come within the ken of the Anti-Noise Committee of Chicago, W. L. Park, vice-president of the Illinois Central Railway, is to try out automobile horns on the engines which operate along the lake front; one horn has been ordered and if it is satisfactory others will be placed in service. Lighter bell clappers also are to be used.

SALESMAN CANNOT KNOW TOO MUCH OF PRODUCT, SAYS JOY

Aims Blow at Belief that Salesman Who Knows Too Much About What He Sells is Handicapped —"Maximum Salesman."

The oft'-expressed belief that a salesman can sometimes know too much about the thing he is selling and can scale through to success through superficial methods is sliding rapidly down the ladder of present-day salesmanship. Attempting to argue about something about which a man is not fully informed is going into a fight only partially trained.

The Maximum Salesman, who is not the half-trained man, is described by Henry B. Joy, president of the Packard Motor Car Co. He prefaces his description with a tribute to Col. Goethals, the man who achieved success upon an isthmus strewn with the remnants of ruinous failure. "He did it," said Joy, "because it was his job. No obstacle was big enough to stop him.

"Industry and perseverance in a salesman," continues Joy, "without thorough understanding of, and belief in, the article he is selling will not make the maximum salesman! The qualities necessarily combined in the maximum salesman are varied but essential.

"Be a good listener. This habits puts shot in your locker. It gives you the psychology of the 'case' and puts your feet firmly on bed rock by permitting you to apply the basis measure—'Put yourself in his place.'

"Talk little, talk well and to the point!

"Know you are right in your facts and arguments. If your arguments are based on hearsay or 'hot air' you will not be convincing. Unless you have gathered the facts yourself the chances are you may be lying about your own goods!

"Argument vs. facts—You may think your opinion is argument. It is not nor is it convincing unless insinuatingly supported by facts gleaned from your own experience or that of known authorities of repute.

"The Maximum Salesman is born and improved by training. He does not work directly for the reward of dollars. He works to win his 'cases.' He works for the gratification resulting from his successful efforts.

"Artful equivocation is not salesmanship. It is double discounting the future. Each such sale is a stumbling block to future business. A maximum salesman's success results from the confidence in him which his dealings with his customers have created."

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TRAINING SALESMEN TO GET KIND THAT SUITS

Reilly Takes Issue With the Man Who Says He Can't Get the Right Kind of Helper—Suggests to Sales Manager That the Dealer Train Men for His Own Service—Illustrates With Own Experience.

In the transfer from coop to crate the turkey made a break for liberty, and just as Reilly shot around the corner of the horse barn the bird threw in the reverse. Both the turkey and the old Reilly farm dog whisked between and around Reilly's legs in a cloud of tail feathers, straw and other things and the little dealer was thrown for a five-yard loss.

But the dog made a fine tail-end tackle in front of the barn and, after a desperate struggle, Reilly and the Sales Manager jammed the gobbler into the crate.

"There, darn yuh!" and Reilly drove home the last nail in the crate.

"What did you let him get out for, anyway?" demanded the Sales Manager as he helped boost the bird into the tonneau.

"Aw, why don't your mother keep ducks?" was the boyhood sarcasm.

They were half way to town and Reilly had nearly finished a dissertation on the whys and wherefores of turkey raising when the Sales Manager gave the conversational steering wheel a twist with the remark, "Oh, say! You don't want to get rid of your salesman, do you?"

"Not especially; why, who wants him?"

"Tommy Meck wrote in the other day that one of the dealers in his territory wants a man."

"Don't they have any salesmen out in that country?"

"Yes, they have salesmen, but this dealer seems to have had hard luck; he hasn't been able to get the kind of man he wants."

"Maybe he wants a hundred dollar man for about twenty a week."



"JUST THIS," SAID REILLY. "I'VE MADE THE SALESMAN LARGELY WHAT HE IS"

"Perhaps that is his trouble. But, at that, Reilly, some of these smaller dealers—and big ones, too—must have trouble getting the kind of men they want. You're pretty fortunate with the salesmen you have."

"Is that so?" exclaimed Reilly in a somewhat sarcastic tone.

"Isn't it?"

Helped Him Become Good Salesman.

"Maybe it is, but who's to blame for it? I suppose he walked in one day and said he wanted a job and kept right on working and never noticed all those good offers you imagine are made him."

"What do you mean 'Who's to blame?'"

"Just this—that I've made the salesman largely what he is. He wasn't much of a salesman when he came with me, and he'll tell you so if you care to ask him. I never could get one that just suited me, but I've got Charley and I'm going to keep him as long as I can."

"But you don't——"

"Yes, I do! It's pretty hard for any man to get a salesman who is exactly what he wants. They don't grow that way. The salesman might be a good man and all of that and still not exactly suit. The only way I know of to get just the kind of man you want is to take a man and train him—educate him in your own way. Then if——"

"You sonufagun!" The Sales Manager slapped his gloved hand on top the gobbler's head and persuaded the bird to leave off trying to pick the eyes out of the rival bird in the finish on the back of the front seat.

Training Man Best Way to Get One.

"Here; I'll fix him." And Reilly suited the word by arranging a robe over the crate and between it and the varnished back seat. Then they drove on again.

"Do you mean to say," demanded the Sales Manager, inspecting the pecked spot where his glove collided with the gobbler's beak, "that if a dealer wants a salesman the only way he can get one is to train one?"

"No, I don't mean that; but that is one way; also, probably for the dealer who doesn't want to pay any more than I do, that is the one way in which best results can be obtained. It stands to reason that if I have no salesman and want a salesman there must be one somewhere who approaches the standard that I have set up in my own mind, but it also is very likely that if I find this man he is a higher-priced man than I can afford to keep. There are hundreds of good salesmen but they can demand big money, and big money can't always be paid by the dealer who isn't making a startlingly big income himself.'"

"There's a lot of logic in that, too."

"I don't know how many dealers there are who are what you might call small dealers—men in the smaller towns of the country. Sometimes you will find a pretty

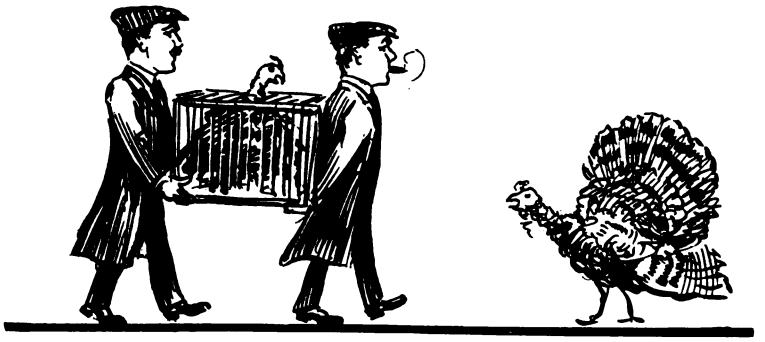
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big dealer in a rather small town, but the rule does not hold. Many of these dealers must have salesmen and, as you say, the problem is 'How to get them.'

"When I first started in business I did most of my selling myself. I think every dealer ought to be able to do some selling even if he doesn't have to get into the thick of the work himself. Well, after the business began to grow and I saw that if it was to keep on growing I would have to have help, I gave thought to this same salesman question. I naturally dreamed first of bringing in a hot-shot salesman who would be even better than I was and give things such a boost that I would be a millionaire in a couple of years."

"Are you?"

"No, I'm not! I felt around for the kind of a man I wanted, but in every case I learned that the sort of salesman I had in mind wanted so much money that if I paid it it would mean lean pickings until the business got that 'millionaire boost.' The more I thought it over the less I believed I could get what I wanted. And, still, I wanted what I wanted. By and by this idea of developing a man seeped into my cranium and I then set my trap for a likely-looking piece of material. I found Charley.



"OH! HELLO, CYCLECAR!" SAID REILLY TO THE LESS PORTLY BIRD

Gradually Worked Into the Business.

"Charley had ability, I could see that; but he was young in the selling business. He was willing to come on at a reasonable salary and learn the business. Of course, he didn't go out and sell a million cars the first week; I didn't expect him to. But he worked into things nicely and got so he could handle any ordinary sale. And now—he can handle any sale."

"Why doesn't he leave you, now that he's good?"

"That's a good question, Jim. Why doesn't he? The only answer is that he doesn't leave me now for the same reason that he didn't leave me long ago. I've been fair and square with Charley and we like one another. I've made him feel that he has an interest in the business; every time I could help him in any way I've done so, as fast as he progressed I've made it worth while to him, he knows the inside of my business to a great extent and he knows that as the business grows he grows. We've gotten into the habit of pulling together and he stays because he likes the place.

Considers Taking on Another Pupil.

"But he'll go some day, and even though I may regret it I will not try to block him if it's a good move. Far be it from me to keep him from bettering himself, but—unless it's a chance to better himself a whole lot he won't go. I could use another salesman right now, and before long I'm going to get another promising young man and start him along the right path—my path, anyway."

"Do you mean that every dealer must take a kid and raise him?"

"Not that, not that! I prefer to pick a young fellow because they are easier to train, but there's nothing to prevent a dealer taking a man with gray whiskers if he wants to go to that trouble Also, you can get the young fellow at a more reasonable salary than you can the older man. But this statement that you can't get the kind of salesman you want loses much of its force when the possibilities in the educational line are revealed.

"At the same time I was looking around and found Charley one of the other dealers in town, who started about the same time I did, was confronted with the same problem. He hired an older and a better man and kept him for a short time and then let him go because they couldn't get along. The salesman didn't do things in this dealer's way. Instead of trying to mold the salesman into the dealer's way of working they had a scrap and the alliance broke up.

"Then the dealer got another one and the same thing happened. The dealer didn't seem to be 100 per cent. efficient in handling men, anyway, and before long this salesman departed. This dealer now has a salesman who has been with him for quite a long time, but the dealer still says he can't find a salesman to suit him. Instead of training this man the dealer stands at one side and tolerates him as he is; the dealer knows that if they clash the results won't be the best."

"Maybe this 'not suiting' holler is nothing but a notion. If a man can sell cars, isn't he a good salesman?"

"Sometimes he is," replied Reilly, "and sometimes he isn't. It is not always a question of whether the man is a good salesman. I know men who can sell cars hand over fist, but whom I wouldn't have around my salesroom if they worked for nothing. It's important to me to have a man with whom I can get along."

Unnecessary to Have Training School.

"What do you expect a man to do—start a training school?"

"He needn't go as far as that," asserted Reilly. "Neither does it mean that the dealer needs to lay out a course of instruction. Helping your man in little things is what counts the most. If he does some little detail in the wrong way, tell him; don't let him run along for a time and then fire him. That is what too many men do. They take on a new man and let him try to work out his own salvation. If he doesn't succeed he is let go.

"What the dealer should do is learn whether the new man is receptive to ideas and then try to boost him along. An undeveloped man with a receptive mind will show wonderful results if properly coached. Putting good sales reading matter and trade papers where he can get his hands on them and giving him a chance to pick up things himself are methods that are successful. The dealer also helps himself by training his men upward, for the better the man the better will be the dealer's business. Sometimes it can't be done, perhaps," said Reilly, as they drove in the driveway of Reilly's home, "but in most cases of failure it is because the dealer didn't try."

Sales Manager Aims "Dig" at Reilly.

As Reilly stopped the car back of the house and the Sales Manager prepared to assist Reilly in unloading the crated bird, a less portly feathered aristocrat stalked around the corner of the house.

"Kind of piggish, aren't you?" said the Sales Manager. "Going out and panhandling a turkey from your dad when you've got one at home."

Reilly turned to look. "Oh! Hello, Cyclecar!"

"Why Cyclecar?" asked the Sales Manager.

"We call him that," replied Reilly, "because he gobbles a lot but we don't think he'll amount to much."

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GARAGEMAN WHO MADE HIMSELF A BUSINESSMAN

Like Many Another, He Was Only a Mechanic—Ten Years of No Profits—Then He Hired an Auditor—Today Business Systems Prevail and Monthly Inspections Check Little Leaks—His Methods.

The Man with a Jag steered an uncertain course across a public square and bumped slam up against the iron fence which kept the public out of a little beflowered grass plot. The Man with a Jag felt the fence and pondered. He felt along the fence until he found a gate, but the gate was locked.

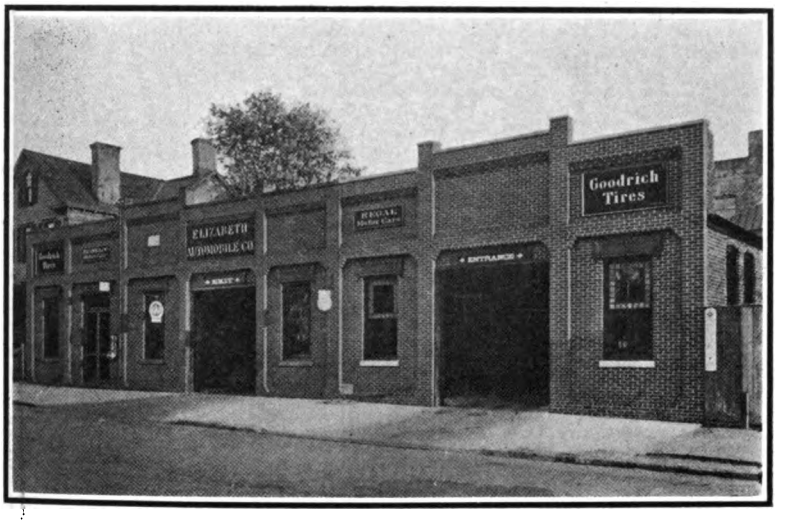
He pondered some more. Then he felt the fence all the way around the outstide of the grass plot and arrived back at the gate. The gate was still locked. After several trips around the fence, all of which brought him back to the locked gate, he said:

"'Sno use, 'll have tuh wait till somebody unlocks the gate and lets me out."

Wherewith he laid himself down on the sidewalk to slumber until someone came "to let him out."

Fourteen years ago F. V. Price, Jr., who is 97 per cent. of the Elizabeth Automobile Co., of Elizabeth, N. J., started in the garage business. He hoped to make money, and at first he thought he was doing so, but before long he discovered that he was up against the fence of "no profits." Unlike the drunk, Price really was inside the fence, and at the end of every twelvemonth course around the enclosure he found himself back at the same old gate with the same old lock.

For ten years Price fumbled around that fence and ten times he wound up at the gate with a bare living where he should have had a handsome profit; and, again unlike the drunk, he did not lie down to wait for someone to let him out. He set about unlocking the gate by his own efforts. Today the fence does not exist. The Elizabeth Automobile Co. is making money—not a fabulous sum, but a comfortable income.



FRONT VIEW OF ELIZABETH AUTOMOBILE CO.'S GARAGE

"I wasn't a business man," said Price, "and I knew it. I was a mechanical man, and all I've learned about business I have learned right here in my own place. But the place is paying today. And what's more, we know why it pays and where it pays, and if it loses we know where it loses and check the loss.

Mechanic, and Ignorant of Business.

"The trouble with me," Price continued, "was that I was like so many more garagemen; I was a mechanical man and knew nothing about business. Some of them are graduates of repair-shops and of the old bicycle days and never learned what they should about business methods. But it can be done, and some of the things we learned about the business rather surprised us."

Price today is a dealer as well as a garageman; he has handled Franklins and Regals for several years, and built up a good trade in these lines. He has a one-story garage, 104x90 feet, at 14 Westfield avenue, and thinks of adding another story. He can store 75 cars if necessary, but seldom accommodates this number. The establishment employs three night men and a day force of seven men and a foreman. Besides these there are Price, a bookkeeper and two salesmen. Price also has secured the Standard electric agency and one of the salesmen is engaged in doing missionary work along this latter line. Of Franklins and Regals the company sells from 35 to 45 a year.

That is what Price is today. Fourteen years ago—he was 16 then—he hired out to work for a couple of men who opened the garage "on a bluff." They lasted two months, when Price bought them out. He had a little machinery, got some more and made his venture into the automobile trade, which, comparatively, wasn't any older than Price.

Hasn't Been Closed in Fourteen Years.

One thing which has helped to bring trade to the garage is that—like some saloons—after it was opened up the proprietor figuratively threw away the key. The garage hasn't been closed day or night in 14 years. But despite the fact the trade liked Price, despite his success in selling cars and despite the loyal clientele he built up, he didn't make money. When he undertook to figure out why he was not running on the up grade he soon discovered it was a task that might well require more able help, so he hired an auditor.

The auditor is still a part of the business. Every month he calls at the garage, Price the shop foreman, the bookkeeper and the auditor go over the situation and whittle out little plugs to stop up business leaks. The auditor found a lot of things on his first visit to the garage. When he got through he showed Price that his business was like a sieve—an old, worn-out sieve at that. It wouldn't hold half-inch nuts.

This auditor inaugurated a business system and helped put Price on the way to being a business manager, and today Price keeps his hands out of the grease and dirt and lets the salesmen make most of the sales, while the "boss" acts as a manager. He learned well the lesson that the highest paid job is that of manager and that the proprietor of a place of any size doesn't

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effect any economy by neglecting his managerial duties and taking the place of a floor boy in filling "gas" tanks.

The leaks that the auditor stopped were the flagrant ones, but every little while he stops another. Not long ago the auditor checked over the figures for oil bought and sold and discovered that there was a leak somewhere; every barrel of oil became less than a barrel when it was sold to the garage's customers. It might never have been noticed had not the auditor trotted out the figures in support of his statement.

Having demonstrated this, he and Price began an investigation. The answer was so simple as to appear trivial. Under a row of four cocks for different oils was a long trough which caught the drippings from the faucets. By the time the four cocks had dripped a gallon into this trough the mixture was no particular kind of oil, and was thrown away. The trough was replaced by four ordinary tin pails, and now when a pail collects an appreciable quantity it is filtered back into the barrel from which it came.

Found Cotter Pins Constituted Leak.

The auditor got to digging around among the bills one day and asked Price how much he got for cotter pins. Price said he didn't know—in fact, didn't believe he got anything for them. The auditor then told him how much he paid a year for these little pieces of metal and asked him how and where he ever got this money back. As a matter of fact, Price wisn't getting the money back; it was a loss.

With the auditor Price went over various bills and items and arrived at a solution. Now when a repair job leaves the shop the bill carries an item of 25 cents for cotter pins and several other little items of this sort. The amount spent in a year for pins and the number of repair jobs in a year helped arrive at this figure.

At this juncture it is not inappropriate to ask any dealer, "How much does your free inspection and service cost you?" It costs the Elizabeth Automobile Co. $6 a year per car; the $6 is not of so much importance as is the fact that Price knows what the cost is. Service may easily be made a business leak, but Price figures that out of this he gets a good, big $6 worth of advertising.

Outside of announcing the arrival of new cars, Price does little newspaper advertising; he considers his owners his greatest advertisement ,and what the Motor World man saw in the garage one morning bears out the statement. Everybody seemed to smile. Price smiled, the customers smiled, the bookkeeper smiled, the salesman smiled, the workmen smiled, a little tot who went by the door looked in and smiled at the proprietor and a mongrel dog which poked his head in the door did the best he could—anyway, Price smiled at the dog.

Inspection Card Insures Thoroughness.

The why of it is that Price does his best to keep his owners feeling good; every month each owner, during the first year of his ownership, gets a card asking him to have his car inspected. The workman who inspects fills out a "monthly inspection card" which covers everything about the car. New prospects generally are secured from owners and it is not uncommon for an unknown man to send in his check and ask how soon he can get a car.

Several of the company's customers are physicians. One day a patient said he thought of buying a car which lists at less than $1,000. "If you buy that I won't treat you another day," asserted the physician.

"Why?" demanded the patient.

"Because; your heart isn't good, and if you get that car you'll jolt yourself to pieces. You go down to Price and get a car; you can afford it. You're an old man and you'd better take my advice. I mean it; if you get that other car I won't treat you."

The old man is now one of Price's most satisfied owners, and there are other instances of how the company's customers have pushed business in his direction.

Has Built Up Loyal Force of Workers.

Apart from things exterior, a notable achievement has been consummated by the Elizabeth company in the loyal shop force which has been knitted together; some of the men have been there five and six years and seem satisfied to remain. There is no soldiering, no hanging back in the harness, and the organization affords a fair sample of what team work can be.

"How did I do it?" Price repeated the question. "I have been a long time at it. I have had to pick, choose and work. When I got a man I wanted I tried to keep him. There's one boy I brought down from the Catskill mountains and have had with me ever since. I have tried to make the men

ELIZABETH AUTOMOBILE CO.

Employee's Daily Time Card

REPAIR DEPARTMENT

NAME_____ DATE_____ 191

Must be filled in Daily and returned to office

Hours Empl'd	Name of Customer or Description of Work	Order No. or Operation	Check	Office Record

CARD THAT KEEPS TAB ON WORKMEN'S TIME

ELIZABETH AUTOMOBILE CO.

MONTHLY INSPECTION CARD.

Inspect, Adjust and Test Car as Detailed Below.

Date .....
Car .....
Owner .....
Odometer Reading .....
Mechanic .....
Front Wheels .....
Steering Gear .....
Springs, Shackles, Clips.....
Body, Shield, Top Bolts.....
All Engine Bolts.....
Magneto .....
Carburetter, Gas Line.....
Radiator, Connections .....
Valve Lifts, Lock Nuts.....
Fan Belt, Fixtures.....
Drain Oil Crank Case, (see odometer).....
Oil Pump, Piping.....
Test Motor, Bearing Knocks.....
Clutch and Pedals.....
Universal Joint, Grease.....
Clutch Trunion, Grease.....
Gear Shift, Alignment.....
Foot and Emergency Brakes.....
Transmission, Bolts, Grease, (see odometer) .....
Differential Grease (see odometer).....
Rear Axle, Strut Rods and Swivel Clamps .....
Rear Wheels, Dragging of Brakes, Bearings .....
Rear Fenders, Loose Nuts.....
Front Fenders, Loose Nuts.....
Dust Pan, Slide Door.....
Side Dust Pans, Loose Nuts.....
Fill Grease Cups, Spring Shackles Bolts, Number Filled .....
Speedometer, Grease Cups, Attachments, Gears .....
Test Batteries, Solution, Specific Gravity.....
Self Starter, Backlash and Alignment.....
Test Car on Road for Noise in Pulling, (Slow Speed) .....
New Parts Used.....
Oil Used .....
Grease Used .....
Have You Forgotten Any Cotter Pins or Nuts? .....
Checked by Foreman.....

Note—Average car should be greased every 500 miles. Oil drained from crank case every 1000 miles—cleaned out with kerosene. Report any defective material or workmanship to office at once or any new parts needed.

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see that whatever the business becomes is due to them, and they know that as the business progresses they will progress. Whenever a man deserves a raise he gets it, and I make it a point to know how they are getting along. But two men ever asked me for a raise, and I let them go.

"There's one man there who gets a $2 raise tonight. He gets $28 a week now and he won't know until he opens his envelope that he's to get $30. One man who found a raise in his envelope brought back the $2. He said he was satisfied and didn't want any more. Can you beat that? Lots of times I have to go out in the shop after 6 o'clock and drive the men home, they are so interested.

Methods of Keeping Men Feeling Good.

"They are very loyal and interested. I try to make them feel that the fact that circumstances have made me the 'boss' doesn't make me any better than they are. Occasionally I buy a row of seats and we all go to the theater, or we have a dinner. I do my best to show them I appreciate their work. They get along well together, too. They run baseball pools in the summer, and if they want to buy raincoats, for instance, they put in so much apiece every week and every week someone gets a raincoat."

As a means of aiding the men in becoming more efficient, a system of marking up jobs and time is employed. On a blank, which is illustrated herewith, the workman marks the time, owner of car and a letter which describes the work he has been doing.

Letter Key System That Saves Time.

The use of 18 letters saves time the workman would have to spend in writing down the task. The letters and the jobs they indicate are: A, battery charging; B, cash job; C, changing tires and tubes; D, changing springs; E, demonstrating; F, delivering car; G, driving—rentals; H, greasing; I, guarantee time (service); J, oiling; K, patching tube; L, shop work; M, shop repair; N, selling gas; O, selling oil; P, storage; Q, towing car; Z, miscellaneous. Thus—1, J. K. Brown, Q, means that the workman spent an hour towing in Brown's car.

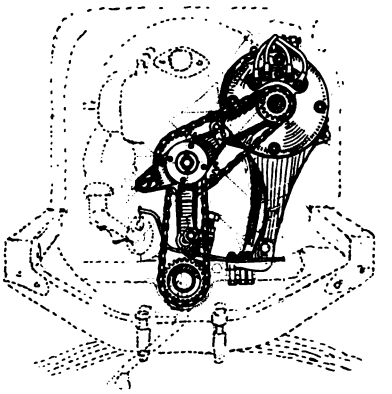
The equipment includes an automatic air-compressor and a charging station, with a not large but sufficient machine-shop equipment. The front of the garage is of red brick, on which the signs are arranged in panels and well balanced across the front—a style in which there are great possibilities. The company has three competitors within two blocks but does not worry; whatever worrying is done is done by the competitors.

NORTH EAST MAKERS DEVELOP ELECTRIC SYSTEM FOR FORDS

Combined Motor-Generator Can be Installed by Any One Without Engine Alterations — Improvements in Other Apparatus.

Bearing the distinction of being the first manufacturer to do so, the North East Electric Co., of Rochester, N. Y., has quietly developed and now has placed on the market an electric lighting and engine starting equipment for Ford cars; furthermore, the application of the apparatus is so simple and the equipment so complete, it is pointed out by the makers, that no Ford owner need have any hesitation regarding his ability to make the installation himself.

The appearance of the apparatus as it is installed on a Ford engine is shown by



NORTH EAST FORD EQUIPMENT

the accompanying illustration, which makes plain that the whole apparatus consists of a chain sprocket which fits on the forward extension of the engine crankshaft, a bracket, two chains and the combined North East motor-generator; the battery that serves to start the motor and to furnish current for the lamps is mounted in a box on the running board or in any other convenient place.

Like all other electric lighting and engine starting systems, the North East is quite automatic in action once it has been installed. It differs from others, however, in that there is an arrangement of gears within the motor-generator casing, which are automatically shifted to afford the proper ratio between the engine and the electric unit according to whether it is used for starting the motor or for charging the battery. In operation, the unit becomes an engine starter instantly the starting button or pedal is depressed; when the engine has picked up its own cycle of operations and the button is released, the driving gears automatically are shifted and the unit becomes a dynamo and charges the battery. When the engine is stopped, the connection between the generator and the battery automatically is broken, thus protecting the battery and preventing it discharging itself through the generator.

Coincident with the development of the Ford equipment, the North East company has brought out a new form of combined lighter and starter which is direct driven instead of being driven through gears. It is adaptable to small four-cylinder motors having bores of less than four inches and is connected to the engine through a countershaft. For larger engines up to the largest "fours" and "sixes," the model B system has been revised and now is mounted on a gear box through which it carries on its functions; the connections are the same as those for the smaller model. A new switch also has been brought out in which provision is made for controlling both starting and lighting circuits. Owing to the construction of the switch, any or all of the lighting buttons can be locked either on or off in pairs or individually, thus precluding the possibility of any one other than the person holding the key tampering with the lights when the car is left unattended.

Special Unisparker for Ford Cars.

Apparently there is to be no end to the evolving of specialties for Ford cars. Probably the business will go on just as long as Henry Ford goes on turning out his little machines. The case in point, however, is that of the Atwater Kent Mfg. Works, of Philadelphia, which has designed an ignition system that any Ford owner can have—if he has the price—and which will, according to the makers, effect substantial improvement in the running of the motor and, taking the burden of ignition from the shoulders of the flywheel magneto, leaves it free to supply current for lights.

The outfit consists of a specially designed Unisparker with its bracket and the connections necessary to drive the shaft on which is mounted the elevated distributer, a non-vibrator coil which replaces the four Ford coils, switch and wiring. Current is taken from dry cells or a storage battery. The change can be made in about four hours, and the only tool needed is a screwdriver. Increased power, steadier running and great reliability are claimed for the system.

Very Little Gasolene—But Oh, My!

A good idea of the energy latent in gasolene may be gained from the fact that an explosive mixture contains approximately 1 part of liquid gasolene to 10,000 parts of air. But though the proportion of gasolene is small, the engine won't run without it.

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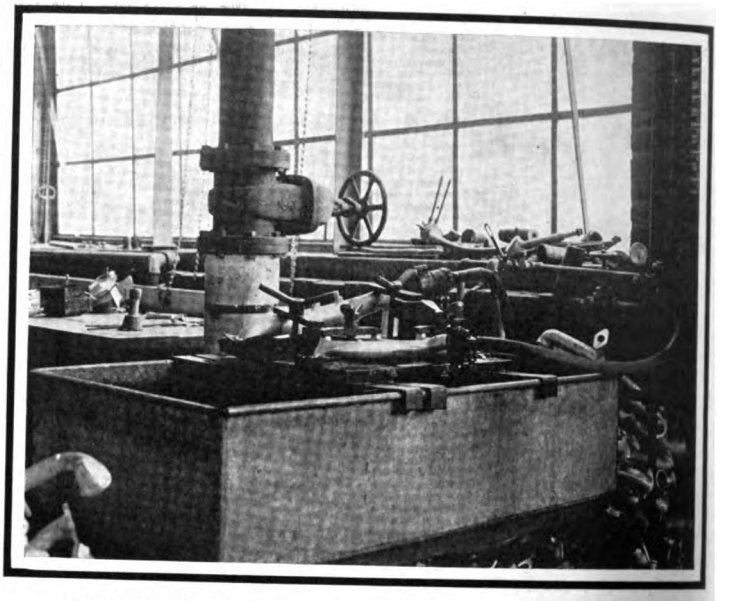
TROUBLE HUNTING METHODS IN UP-TO-DATE FACTORIES

How Water is Used to Ferret Out Faults that Escape the Eye—Fluid Flow for Measuring Spray-Nozzle Capacity.

It does not matter how careful a workman may be, how accurately his gauges and jigs are calibrated or how little of the human equasion enters into the building of an automobile; some parts out of the many that are built are certain to get past with imperfections that would make endless trouble in the future, or, at the very least, reduce the efficiency or the reliability of the cars of which they were component parts. For this reason the various testing processes that are in use in all factories where automobiles and their parts are manufactured are not only important, but indispensable; they are the detectives that ferret out things hidden from the eye and show up faults not otherwise discoverable before it is too late.

In a modern factory the testing operations are extended to include many parts that one might pardonably imagine did not need much testing after having been carefully inspected. To look at the water manifold of an Overland car one would not think, perhaps, that such a thing would have much chance to go wrong; yet every one of the thousands that are put into cars in the Willys-Overland factory in Toledo, O., is tested by itself.

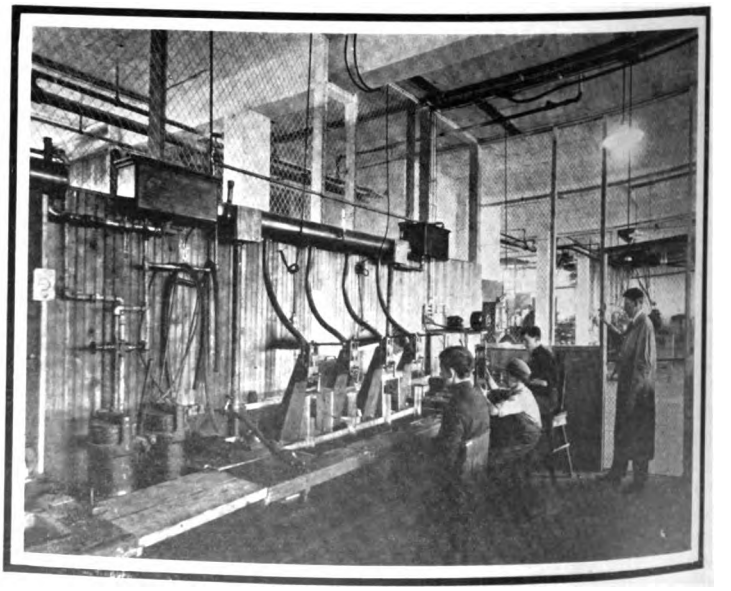
The apparatus used for testing the water manifolds is shown in the accompanying illustration. One end of each manifold is clamped to a testing block with a rubber gasket under it; in other words, the end is blocked up watertight. The other end is then connected with a water main into which water is pumped at a pressure of 100 pounds to the square inch. The opening of a valve admits water to the manifold, and if there is the slightest leak anywhere it will be found out and betrayed by the escaping liquid, which will issue in drops or in a little jet according to the size of the hole. Cold water, be it said, is perhaps the most merciless agent known for showing up leaks, and is in general use for testing boilers and other structures subjected to pressure. While heat sometimes will help to stop a leak by causing the expansion of metal, the cold precludes this and if no leak shows under cold water pressure it is a sure sign that there is no leak at all. Moreover, in the case of the Overland manifolds, the testing pressure is so greatly in excess of the working pressure that leaks show up under test that would not develop in service for a long time, if, indeed, they ever came to light.



OVERLAND HYDRAULIC TEST FOR DEFECTS IN WATER MANIFOLDS

A very different kind of a test is carried out in another factory—different, though it is a water test and the water flows through holes. It is carried out in the plant of the Zenith Carburetter Co., of Detroit, and concerns one of the smallest, and yet one of the most important parts of the Zenith carburetter—the spray nozzle. The holes in the spray nozzles are designed to be of a certain fixed area; each hole must be of such size as to allow the passage of a certain amount of water per minute. If there is a very slight variation in the diameter of the hole there will be a very considerable variation in the flow of water through the nozzle, the area increasing much faster than the diameter. And it is obvious that there could be nothing but trouble from a lot of carburetters if the spray nozzles were not uniform in this respect.

So it comes that every single spray nozzle that goes through the Zenith factory is tested. The testing plant consists of a constant level tank mounted above a holder in which the nozzles under test are fastened. By having a constant water level a



WHERE ZENITH CARBURETTER JETS ARE TESTED WITH WATER

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constant pressure is assured, and by using nothing but carefully filtered water a normally free flow is provided for. Under each nozzle holder there is a glass graduate into which the water is allowed to flow when turned on. A nozzle of a given size is calculated to fill the graduate up to a certain point in a minute—the time is carefully taken—and any nozzle that does not measure up to the standard is sent back and either made right or replaced if it cannot be improved.

This seemingly finicky exactness in the matter of spray nozzles is due to the most practical of reasons. Without uniformity of flow through jets of a given nominal size it would be impossible to predict, or to do anything but guess, at what might happen if a change of jets should be made in a carburetter, and the performance of two carburetters apparently identical might vary greatly because of a microscopic difference in the hole diameters. A tested nozzle, however, is something that can be relied upon; it is a known quantity, and if there is a lack of uniformity of action it can be looked for in other directions to the saving of time and trouble.

Inspection of Lamps that is Needed.

Just because electric head and side lamps are lighted and extinguished from the driver's seat is no good reason why they should be neglected for weeks on end. According to the investigations of an illuminating engineer, the efficiency of the electric lamps in a large factory was increased as much as 15 per cent. by periodic washing of the bulbs. Incidentally, the lamp fastenings should be examined from time to time to make certain that they have not worked loose through the effects of vibration.

ARGO COMPANY DEVELOPING STORAGE BATTERY TRACTOR

Powerful Machine Has Short Wheelbase and Battery Weight on Driving Wheels—Steel Tired Trailers Reduce Tire Expense.

The tractor principle—the idea of using power to haul loads on trailing vehicles rather than to carry them on the power truck itself—appears to be gaining adherents, judging not only by the increasing number of trailers in service, but also by the number of manufacturers who are trying out experimental outfits of the tractor types. Among the more important firms working along tentative lines is the Argo Electric Vehicle Co., of Saginaw, Mich., which, though not yet ready to market a tractor, is actively engaged in the preliminary experimental work, and, in fact, has practically perfected its machine.

As the accompanying illustration clearly indicates, the Argo tractor, in its present stage of progression toward commercial perfection, is a tractor pure and simple, with no provision for load-carrying. The wheelbase is very short, for the simple reasons that the body space permitted by a longer wheelbase is not required and that a short wheelbase economizes space and permits maneuvering in restricted places and rapid handling under all conditions. A long wheelbase tractor with a drawbar and a trailer behind would take up an unnecessarily great amount of room. What little platform space there is on the Argo tractor is occupied by the battery, which thus is brought directly over the driving wheels, where its very considerable weight is turned to account in affording the traction necessary for the application of power to move heavy loads.

The battery on the platform is in the most accessible position possible, and, barring the necessity for changing batteries instead of waiting for a fresh charge, or removing them altogether for overhauling or the like, can be left on the tractor indefinitely. Inspections and tests can be carried on just as well as if the cells were on the bench or the floor. The battery in the tractor illustrated consists of 40 cells of 17 plates per cell; the motor is a Westinghouse and the axles are Timkens.

The trailer is of the conventional horse-drawn truck type, in a general way. It is connected to the tractor by a drawbar that is jointed at both ends, the joint at the tractor end having lateral play and that at the trailer end vertical play, so that while there is motion enough to prevent jamming and binding on rough roads, there is sufficient rigidity to cause the front wheels of the trailer to follow the turns of the tractor. The tires are of steel, and this brings up the important advantage that the load on the rubber tires of the tractor is a constant load, barring the load imposed by the application of power from the motor, and is comparatively light, while the heaviest and the most variable loads are carried on the steel tires which, of course, cost far less to buy and to maintain than the rubber tires.



SIDE VIEW OF ARGO ELECTRIC TRACTOR SHOWING BATTERY WEIGHT OVER DRIVING WHEELS

Where Hammer Should Supplant Wrench.

If a nut is obstinate and will not yield to the wrench, or if the wrench is not a good fit, it is far better to remove the nut with a hammer and a blunt chisel or a punch than to spoil the wrench. It is a much smaller matter to get a new nut than a new wrench if the nut is spoiled.

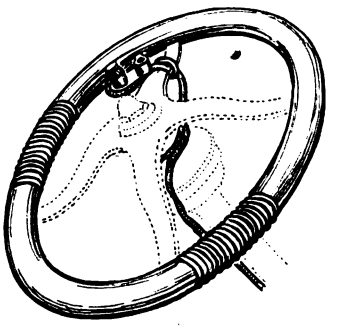
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RECENT DEVELOPMENTS in ACCESSORIES

To Keep Warm Ford Driver's Hands.

Driving a car with cold-numbed hands does not rank high among agreeable pursuits; but there are thousands who do it—and not because they like cold hands, either. The Warm Hand Steering Wheel Co., Inc.—the "Inc." has been acquired recently, though the company has been making its devices for some time—makes its business the mitigation of digital chilliness, manufacturing steering wheels incorporating electric heaters, and its latest product is an improved special type for Ford cars. A factory has been established at Poughkeepsie, N. Y.

The Ford hand-warmer is built into a steering-wheel rim adapted to be put in the place of the regular Ford rim. The heating device consists of a coil of resistance wire wound around the rim; the wire is insulated and enclosed in a metal tube so that it is thoroughly protected and there is no possibility of the driver receiving a shock. There are two such coils, at points where the hands habitually grip the rim, and they are sunk so that they do not increase the diameter of the rim. The two coils are connected by a wire that runs in a groove on the inside of the rim. One end of the heating wire is connected to a plate that comes under the end of a spoke of the spider when the rim is in position, thus establishing a ground connection; the other end terminates in a socket into which fits a plug terminal on a flexible cable which, at its other end, is connected to the magneto. Beside the terminal socket referred to is a similar socket which, however, is a "dead end"—that is, it is insulated from the circuit completely, so that if the plug is transferred to it the current will be cut off. The current consumed is said to be so small as to have no effect whatever upon the ignition function.



WARM HAND WHEEL FOR FORDS

Woodworth Develops "Double-Grip" Tread.

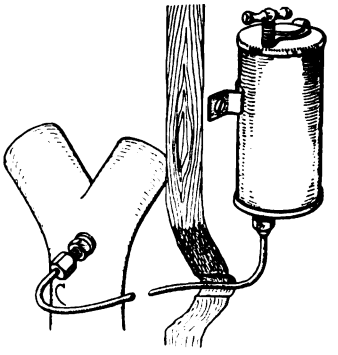
A most seasonable offering designed for cars that are used throughout the winter is a non-skidding tread of special construction that is designed to give traction under the worst possible winter conditions. The tread is the latest product of the Leather Tire Goods Co., of Niagara Falls, N. Y., and bears the Woodworth name. Its general appearance is shown in the accompanying illustration.

The feature upon which the makers lay special emphasis is the rivet or stud that does the gripping. It is of steel with a comparatively small projecting center brought to a rounded point and hardened; the outer edge of the body of the rivet, at the base of the projecting center, is raised, so that when the center wears down the sharp rim takes hold and prevents slipping—which gives rise to the name "double-grip" which is applied to the stud. The studs are closely placed and are clinched through a base of soft material made up of an outer layer of chrome tanned grain leather treated to keep it permanently soft, three plies of treated Egyptian cotton fabric, and a thin inner strip of leather to hold the rivets firmly in place.



WOODWORTH "DOUBLE-GRIP" TREAD

Like all other Woodworth treads, the new non-skids are held in place by strong springs having a tension that takes up the inevitable stretch of the leather as fast as it occurs. The makers state that these springs, which are patented, are vital to the success of the tread. It is intended that the treads should be left on the tires all winter, affording traction under all conditions; and by spring, when road conditions are better, the stud centers will be worn down and the sharp edges will act as ordinary non-skids. The treads, of course, offer high resistance to puncture.



INDIANA DASH PRIMER

Here's Simplicity in Priming Device.

It is difficult to start a cold engine on a cold morning, not only because gasolene is difficult to vaporize at low temperatures but also because cold vapor is less easily ignited than warm vapor. However, when a car has to be started with a hand crank and the carburetter refuses to give up a starting charge, the only thing to do is to prime the cylinders. The time-honored system of opening the petcocks and squirting in gasolene with an oil can still is in common use, though it never, even in its palmiest days, could be said to be particularly "popular."

A much better way, so far as results are concerned, and a much easier way, is to use one of the modern priming systems. One of the most recent of these is the Indiana primer, made by the Engineering Equipment Co., of Indianapolis, Ind., and shown in the accompanying illustration. There is little to explain, for the outfit consists merely of a little tank that is attached to the dashboard and a pipe and connections for leading gasolene from the tank to the intake manifold. A valve in the tank permits gasolene to flow to the manifold and supply a good, rich mixture until the engine warms up a little. The device also is useful for working kerosene into the cylinders for removing carbon deposits. The tank holds half a pint.

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PROVIDENCE DEALERS STAGE SHOW IN JAPANESE GARDEN

Third Annual and Largest Exhibition Yet Reaches Even into State Armory Gallery—40 Brands of Cars and 12 of Trucks.

Spread out over the main floor, the whole of the basement and the gallery of the State Armory, the third annual show of the Providence (R. I.) Automobile Dealers' Association, which was opened on Saturday night, 22d inst., is by far the largest exhibit that ever has been staged in Rhode Island's largest city. All told, 40 brands of pleasure cars are staged on the main floor; 12 makes of commercial vehicles are disposed in the basement, together with six different makes of motorcycles; and seven exhibitors of accessories occupy the balcony.

In the matter of decorations, those who had charge of affairs reached out across the sea for inspiration and adapted scenes from the land of cherry blossoms for both main floor and basement. In other words, both stages, if such they may be termed, have been metamorphosed into Japanese gardens, the effect being heightened "up stairs" by an immense oil painting done on silk which hangs at the back of the hall. The complete list of exhibitors is as follows:

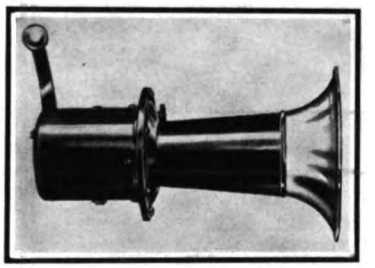
Pleasure cars: Whitten Motor Vehicle Co., Abbott-Detroit and Herreshoff; Pugh Bros. Co., American, Palmer-Singer, Overland and Maxwell; Adams & Knight, Apperson; Aetna Bottle & Stopper Co., Buick; Cadillac Auto Co., Cadillac; Davis Automobile Co., Chalmers, Winton, Regal and Locomobile; Wm. H. Fuller, Cole; E. E. Whipple, Detroiter; Fiat Motor Sales Co., Fiat; Wallace L. Wilcox Co., Franklin; L. N. Lorimer, Hudson; Lister, Smith & Welsh, Jackson and Paige-Detroit; Thos. B. Jeffery Co., Jeffery; King Motor Co., King; Nock Auto Co., Kissel; Hitchcock-Banks Motor Car Co., Knox; Providence Motor Car Co., Mercer; C. K. Setchel, McIntyre; P. S. Clark, Oakland; E. A. Sontag, Oldsmobile; Packard Motor Car Co., Packard; Peerless Motor Car Co., Peerless; Foss-Hughes Co., Pierce-Arrow; Herbert E. Bradford, Pilot; Pope-Hartford Auto Co., Pope-Hartford; John O'Donnel, Premier; Wm. Hughes Co., Reo; Capitol Motor Car Co., Stanley Steamer; J. E. Newton, Stevens-Duryea; Goodwin-Sherman Motor Car Co., Studebaker; Kendall Garage, Stutz; White Automobile Co., White.

Commercial vehicles: Pugh Bros. Co., Federal and Willys; F. B. & A. W. Hopkins, International; R. S. Longley, Kelly; Nock Auto Co., Kissel; Hitchcock-Banks Motor Car Co., Knox; U. S. Mill Supply Co., Mais; Packard Motor Car Co., Packard; Peerless Motor Car Co., Peerless; Pope-Hartford Auto Co., Pope-Hartford; Stanley Motor Carriage Co., Stanley steamer; White Automobile Co., White.

Sparton Adds Hand-Operated Signal.

If the inventive powers of designers of mechanically operated horns were to fail there would not be much cause for surprise, for the number and variety of horn designs that have been worked out is little less than phenomenal. But there appears to be no lack of fertility in the field, for there just has appeared still another hand-operated horn that embodies unusual features and has certain claims to advantages all of its own.

The horn, the "Sparton-Echo," is the latest member of the Sparton family, and the Sparks-Withington Co., of Jackson, Mich., which produces it, has been engaged in bringing it to commercial perfection for some little time. As the object of such a



SPARTON-ECHO LEVER HORN

device is to make a noise, the first claim made for the new horn is that it will emit a sound said to be equal to that of the motor-driven horn of the same make. And having established this fact, the makers go on to say that the way in which the noise is made—or, rather, what the operator has to do to make the horn work—is particularly deserving of commendation. There is a simple lever, as the accompanying illustration shows, projecting through the top of the casing at the rear of the horn. Pushing the lever forward sets in motion the hidden internal parts that vibrate the diaphragm that produces the sound.

If the tone of the horn is not just what it ought to be, or if the driver wants to change it for any reason, he can make adjustments from the outside with a screwdriver; the horn doesn't have to be taken apart for the purpose. Durability has been provided for by hardening all the wearing parts, and the makers state that no gears of any kind are employed in the "works." Two models are in preparation; model J, which will cost $7, and model B, the price of which will be a dollar more. Deliveries will commence about December 1st.

TAKING CHANCES ON THIEF MAKES INSURANCE CHEAPER

Eastern Rates Lowered by Elimination of Theft and Valued Policy Clauses—Damage Limit of $25 Takes a Different Form.

Alterations in rates relating to theft, damage and valued policy clauses have been promulgated by insurance companies operating in the eastern part of the United States, to take effect December 1; one change effects a lower rate by the elimination of the theft and valued policy clauses and another deals with a "$25 deductible average."

Should the owner of a car care to forego the right to a specified sum of money in the case of damage and permit the insurance company to make good only whatever loss—excluding theft—is sustained, the car owner can secure a policy at a reduction of approximately ¼ of 1 per cent. The new rate ranges from 1½ for new cars above $3,500 to 2 per cent. for those below $1,500. "Last year's cars" are rated at 1½ and 1¾.

New policies covering damage to a car have been altered in this respect: Where the companies formerly paid losses "if amounting to $25" they now will pay "in excess of $25." Under the old policy if the damage was $20 the owner got nothing; if it was $35 he got $35. Under the new policy, if it $20 he gets nothing and if it is $35 he gets but $10.

There has been provided, however, a new clause which enables the car owner to secure full coverage for all losses by the payment of an additional $15.

Small Welding Outfit Developed by Cox.

To meet the growing demand for small, complete welding outfits that can be operated by the average owner or garage mechanic, the C. x Brass Mfg. Co., of Albany, N. Y., just has placed on the market an outfit of the kind. The purpose of the apparatus is to permit any one with average mechanical ability to repair small broken metal parts and thus to save the expense of having them done in a repair shop. Obviously, the outfit is just as applicable in a repair-shop, however. The apparatus is so arranged that it can be used with any acetylene gas tank.

May Manufacture Trucks in Florida.

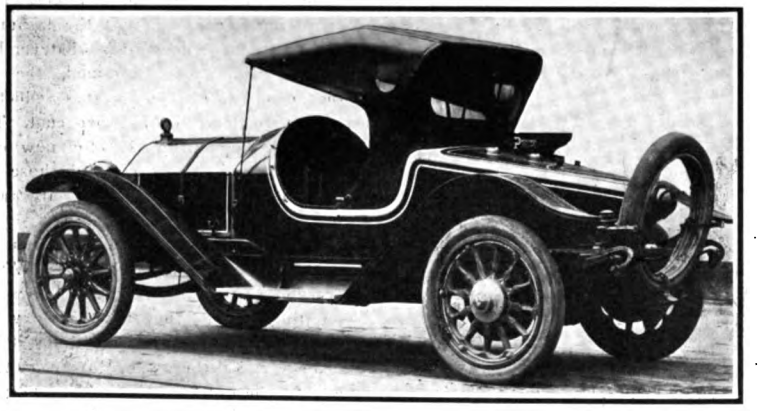
The Haney Fire Apparatus Co., of Tampa, Fla., is reported to be making ready to take up the manufacture of motor trucks and automobile pumps. At present, the concern maintains a foundry and machine shop.

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SPECIAL TOP FITS CRUISER FOR BAD WEATHER VOYAGES

Pathfinder Roadster Made an All-Weather Car by Addition of Protection for Passengers—Top Had to Be "Tailored."

The amply powered car of the roadster type has not a few qualities that make it a fine machine for use at all times and under all conditons where an automobile can be used at all. There is little pleasure, however, in driving a car in the rain, no matter how well it may behave so far as road conditions are concerned. Logically, therefore, there should be some means for protecting the occupants, and the Motor Car Mfg. Co., of Indianapolis, Ind., has taken this view of the matter and provided a special top for its Pathfinder "cruiser."



PATHFINDER CRUISER MODEL FITTED WITH ITS SPECIAL TOP

While it is easy enough to say "Put a top on the car," the doing of it is "something else again." There apparently are no standard or stock tops suitable for such service, so the Motor Car Mfg. people had to design one especially for the Pathfinder. Bows were bent to suit the car and the cloth was "tailored" to fit. Just how the car looks with its new hood can be seen from the accompanying illustration. The picture does not show the storm curtains, which are made to fit snugly all around, completely protecting the passengers. The effect of the top is quite in keeping with the character of the car as a whole, and certainly does not detract from the appearance that helped to gain for it the name of "cruiser."

Goodyear Takes Over Standard Protector.

Arrangements recently have been completed whereby the Standard Tire protector, made by the Standard Tire Protector Co., of Akron, O., has been taken over by the Goodyear Tire & Rubber Co., of Akron, which now is making and marketing the device. The protector has proved its worth in actual service, which fact, coupled with the Goodeyar company's position in the matter, goes far to stamp it as an accessory of no little value.

The Standard protector takes the place of the ordinary retread. It differs from it, however, in essential features. It is not vulcanized to the tire, and so the tire is saved from the slight over-curing which is said to result from the vulcanizing process necessary in ordinary retreading. Further, it is not only a separate thing from the tire, but it is not subject to direct air pressure and acts as a cushion for the casing to prevent cuts, stone bruises and blowouts. It is said that a puncturing point usually will glance off before reaching the tire proper, so that the Standard protector wards off a large percentage of possible punctures. If a tire that has been newly retreaded gives way the new tread is a dead loss, whereas if the protector is applied instead of a retread, the failure of the tire does not involve the loss of the protector, which can be transferred to another tire.

Hearse Chauffeur Arrested for Speeding.

Even if you die you can't get away from the traffic "cop."

Owen Wister was generally accredited with having established a record for speedy funerals in the Virginian, but a New York chauffeur now lays claim to the record; the chauffeur, Christian Frickey, was driving an automobile hearse through Long Island City last week with a somber line of cars behind, when a policeman stepped out into the street and told Frickey that was no way to go to a funeral. The chauffeur protested against being thus held up, but the adamantine arm of the law put in a charge of 35 miles an hour and the chauffeur—or his employer—paid.

ARE RUNNING GARAGE THAT NEVER OFFICIALLY STARTED

When Bridgeport Garagemen Ask Permit to Add to Building They Are Told to Get Permit to Build it—Queer Situation.

The proprietors claim they asked the alage, which is located on State street, near West avenue, Bridgeport, Conn., are in a peculiar situation. They want a permit to enlarge their garage and have been informed that they must first get a permit to open the garage; inasmuch as the garage has been in operation some time, they want to know "where they get off."

The proprietors claim they asked the aldermanic committee having such matters in charge for permission to open a garage last summer and were told to go ahead, "that everything would be all right." They went ahead, but everything isn't all right.

The records in the office of the city clerk show that the aldermanic committee never reported on the application of the proprietors of the garage, and as a result the application for a permit to maintain their garage was never brought before the aldermen.

The proprietors did not realize that anything was wrong until they decided to build an addition to the place and asked Alderman Malcolm MacFayden of the committee on fire department to see that they were given permission to make the addition. Mr. MacFayden, it is alleged, replied that his petitioners would have to get a waiver of opposition from all the surrounding property owners.

Since that time nothing has been done in the matter and the proprietors of the place called at the office of City Clerk Robinson for information, only to find that they were violating a city ordinance by operating their garage and that before they could be given a permit to enlarge their place of business they would have to first receive permission to operate the business.

It was also explained to them that the matter could not be taken up by the board of aldermen until after the meeting of December 1.

Helping Carburetter on a Cold Day.

A scheme that has been used to start a balky motor or to get going in cold weather is to blow gasolene into the air intake of the carburetter with an ordinary atomizer, removing the rubber bulb, however, and replacing it with a rubber tube through which someone blows while the engine is brisky cranked. The fine spray vaporizes much more readily than a priming of liquid gasolene.

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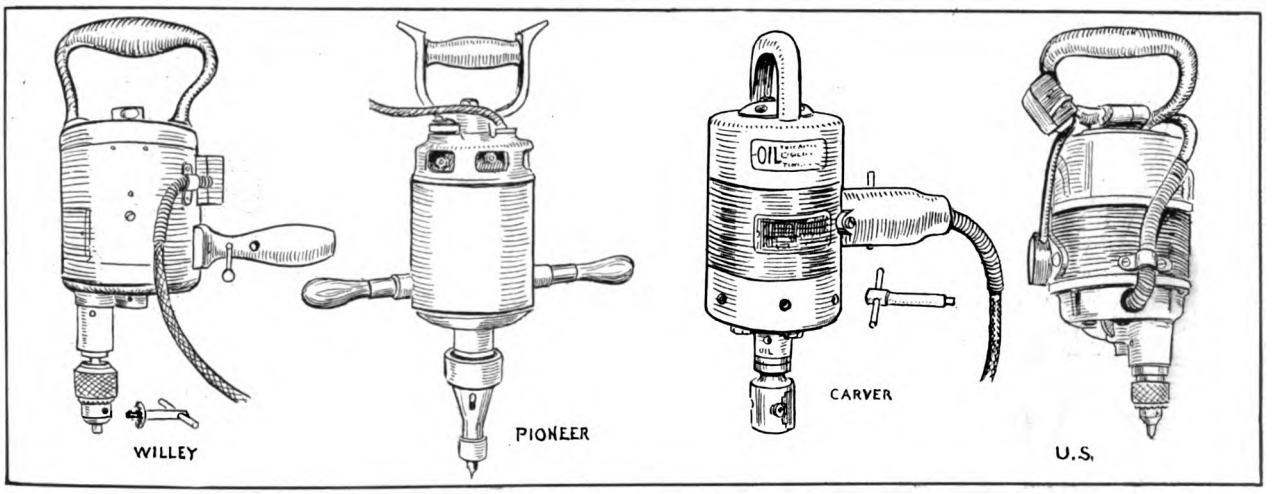
PORTABLE ELECTRIC DRILLS FOR GARAGE USE

Practical Utility of Power-driven Garage Tools and Their Superiority Over Hand-operated Ones—Saving Time by Drilling at the Point of Assembly—Several Types of Boring Devices Described.

"Take the tool to the work," rather than take the work to the tool, is the spirit that animates modern industrial occupations, and it is a spirit that is equally applicable to the average automobile garage, regardless of whether much work or little is turned out.

As a concrete example in point, the experience of one well-known repair-man who has seen the light of the times and equipped his shop with all the modern appliances he can use, is interesting and instructive. A car was placed in this man's shop and the order entered for some machine work on the bottom of the crankcase—work which normally would have required that the engine be disassembled, the part removed and properly fastened in a stationary drill and the engine afterward reassembled. But under the new order of things the car was merely jacked up so that a workman could crawl beneath it with a portable electric drill; the work was done in a mere fraction of the time that ordinarily would have been needed. The repair-man received good pay for the work and he saved his customer a whole lot of time, to say nothing of creating an abundance of that valuable asset, good-will.

As an example, this particular case is an excellent one, for it makes plain at once the practical utility of the tool and the foresightedness of the garage proprietor in equipping with it. He did considerably less work to accomplish a given end than John Jones would have done with his antiquated hand methods; therefore he immeasurably increased the efficiency of his shop. Do you suppose the garage man would part with his electrically driven drill after such an experience? In another case, a manufacturer drilled 120 two-inch holes in a large casting, weighing several tons, at the point of assembly, at one-fifth the previous cost because he avoided the necessity for handling the casting and locating it beneath a drill press; in addition, the machine shop and equipment was available for other work while the drilling was going on.



FOUR DIFFERENT TYPES OF ELECTRICALLY-OPERATED PORTABLE GARAGE DRILLS

Plenty of Portable Power Tools.

There are on the market at present an almost unlimited variety of small, portable, power-driven tools that have been designed to increase shop efficiency by replacing hand labor and thereby increasing production three or four times. Among them, the power-driven drill stands preeminent as the tool of greatest utility to the garageman and the repair-man. A drill every repair-man must have; it rests largely with himself whether it is to be a hand-operated device, slow and inefficient, or a power-driven one which is fast and which does a greater proportion of the work than does the other.

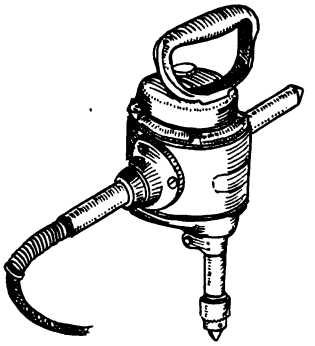
Of themselves, such drills are simple; qualifying adjectives are not necessary to describe the simplicity. The drill is inserted in the chuck and applied to the work; the pressure of a button starts the motor, and in less than half the time required with a hand drill the work is finished. Obviously either compressed air or electricity may be used for power, though electric machines far outnumber pneumatic ones; incidentally, the electrically-operated drill undoubtedly is less complicated than the other and probably is much more convenient for use in the average garage, for few garages are without electric lights and, on the other hand, few have compressed air equipment.

The variety that obtains in the construction of such devices is very great—probably much greater than the average person imagines—though it is essentially a difference of details rather than a difference in principle. Some drills are very small and some are quite large enough to take the place of all but the very largest drill press; some operate on alternating current, some on direct current and some on both, the latter being known as universal drills. Most important of all, perhaps, is that none of them are expensive either to operate or to purchase. For the most part, those who manufacture such devices produce them in a variety of sizes and styles, though obviously it would not be possible to illustrate and describe all in an article of the length of this one. Hence, only those that are deemed particularly suitable for the use

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of the average garage or repair man are illustrated.

Along with a comprehensive line of pneumatically-operated tools of various kinds, the Chicago Pneumatic Tool Co., of Chicago, Ill., also produces Duntley electric portable tools scarcely in less variety, and among them the "midget" drill that is illustrated herewith is of a type that should prove almost worth its weight in gold to the up-to-date repair-man who uses it intelligently. In the first place it is exceptionally small and light—it weighs only six pounds and can be covered completely with one hand. In the second place, it is a veritable glutton for work and will operate with equal facility on either alternating or direct current.



GENERAL ELECTRIC TYPE

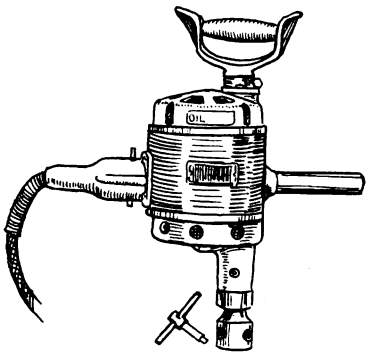
Current Conditions That Govern.

This current feature, by the way, is an important one, and should be borne in mind by intending purchasers of electrically-operated tools of any kind. Tools designed to operate on alternating current will not run on direct current and vice versa; similarly, in order to fill orders intelligently, the manufacturer must know the exact voltage upon which they are to be operated, and if it is alternating current, the number of cycles or alternations a minute. The voltage generally can be ascertained by examination of any electric light bulb, for most of them have a "sticker" on them giving this figure. If the voltage is not more than 110, the quickest way to discover whether it is direct or alternating is to place two fingers across the socket connections; alternating current will give a distinct though harmless shock; direct current will give little or no shock. The method should not be tried with voltages higher than 110, however. Otherwise, the simplest way to ascertain the characteristics of the current is to telephone the central station. One other point: Alternating current motors are constructed to operate on either single phase or double phase current; this factor can also be obtained from the central station and must be incorporated in the specifications to the manufacturer of the tool.

To get back to the "midget" drill: When operating at maximum capacity, the normal speed is 1,500 revolutions a minute, and it will drill holes in metal to 3/16 of an inch in diameter or in wood up to 5/16 of an inch. The chuck will accommodate drills having straight shanks up to 3/16 inch in diameter. The approximate energy consumption of the drill at full load is 160 watts, and as 746 watts represents one horsepower, it can be rated at approximately ⅕ horsepower.

Speed Automatically Regulated.

Most drills of the kind have what virtually amounts to automatic speed control. Which is to say, the larger the drill used up to the capacity of the machine, the slower will be the speed. In words with more of an engineering ring to them, the machines have "series speed characteristics." That is, their torque increases with the load. With a small drill in use, the speed is high; with a large drill the speed of rotation is correspondingly lowered through the inherent characteristics of the motor.



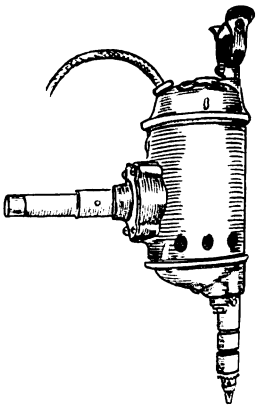
AMERICAN TWO-SPEED DRILL

The United States Electrical Tool Co., of Cincinnati, O., is another maker that produces portable electric drills in a variety of sizes ranging from the little one that is illustratetd herewith up to a veritable monster that will drill two-inch holes in steel. The one that is illustrated weighs but six pounds and will hold drills up to 3/16 of an inch in diameter; the normal speed is 1,000 revolutions a minute. The construction differs from that of the Duntley in that the drill spindle is eccentric to the casing, a feature which permits the drill to be used close up in corners on occasion. Needless to add, there is gearing between the motor armature shaft and the drill spindle. The gearing, however, is completely enclosed and operates in grease. The tool is wound to operate only on direct current and can be supplied for either 110 or 220 volts. In other styles, both alternating and direct current can be used.

Willey electrically-operated garage tools, which are produced by the Jas. Clark, Jr., Electric Co., of Louisville, Ky., also are made in a variety of styles and some are made to operate on both direct and alternating currents. The one illustrated, however, is intended for use only with direct current and weighs complete just 6½ pounds. Despite its diminutive size, however, it will drill ⅜-inch holes in hard wood and ¼-inch holes in steel, the maximum horsepower of the motor being 1/10th. In this drill, too, the spindle is eccentric to the motor armature and is driven through gearing which is a patented feature. Other styles of portable Willey drills have capacities up to two inches in steel, though obviously for the larger sizes screw feed is necessary.

Variety in Shapes of Handles.

Quite as a matter of course, the General Electric Co., of Schenectady, N. Y., produces small electrically-driven shop tools as a part of its extensive line of motors and other electrical apparatus. The drill that is illustrated herewith is one of the smaller General Electric sizes and is particularly suitable for the ordinary garage. It is light in weight, so that it can be easily moved from place to place and can be supplied for either direct or alternating current of either 110 or 220 volts. In steel, cast iron and brass it will drill holes up to ⅜ of an inch in diameter—or ¼ of an inch working in wood. Its capacity, therefore, is slightly greater than any of the others. As ordinarily supplied, it is fitted with what is termed a spade handle, as is shown by the picture, though a breastplate is optional equipment. The equipment includes 10 feet of flexible cord and a Jacobs chuck.



CINCINNATI HEAVY DUTY TYPE

Two types of American electric drills are illustrated herewith, the essential difference between them being that one is a compara-

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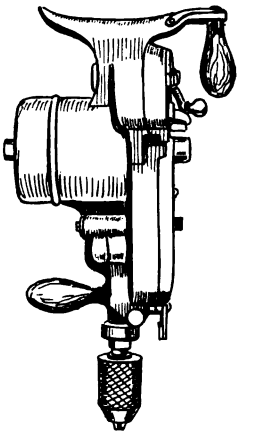
ively light model which operates at one speed and the other is a much heavier model which is fitted with a two-speed gearing to accommodate it to high speed work with small drills and lower speed with larger drills. Both are made by the American Electrical Tool Co., of West Newton, Mass. In the smaller tool, the drilling spindle is concentric with the motor armature, though in the larger one it is eccentric, thus permitting the use of the tool in restricted places. Another essential difference between the two tools is that the smaller will operate on either direct or alternating current, though the larger will operate only on one or the other, according to its construction. The smaller model weighs eight pounds complete and will drill ¼-inch holes in steel and ½-inch holes in wood, the normal speed being 900 revolutions a minute. The larger model weighs 23 pounds and will drill holes up to ½-inch in diameter in steel, the normal speeds being 350 and 650 revolutions a minute. The gear shifting to obtain the different speeds is accomplished by turning a thumb nut on the casing and the shift can be made while the drill is running.

Drills With Fans for Air Cooling.

The Cincinnati Electrical Tool Co., of the Ohio city for which it is named, is another company that produces electrical drills in considerable variety, the type illustrated being made in four sizes ranging in capacity from ¼- to ½-inch holes in steel; the largest size is fittted with a two-speed gearing, though the others operate normally at one speed—or rather at speeds which are varied automatically by the load through the characteristics of the motor. The drill spindle, as is made plain by the picture, is eccentrtic to the motor shaft and is in a direct line with the handle at the top. Both this handle and the other at the side are removable so that the drill can be used in close quarters on occasion. As is the case with many of the other drills, the Cincinnati can be furnished to operate on either direct or alternating current or on both. One of the distinctive features of the drills is that they are air-cooled, a small fan being mounted on the armature shaft.

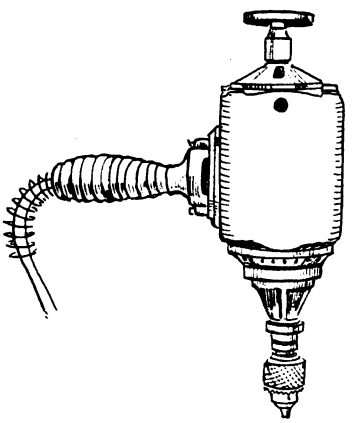
The Temco portable electric drill which is produced by the Temco Electric Motor Co., of Leipsic, O., differs from any of the others in very nearly every respect, one of the principal differences being in the mounting of the motor and the method of drive. Instead of being mounted parallel to the drill spindle, the motor in the Temco is mounted at right angles to it and drives through spur and bevel gearing. Another excellent feature of the drill is that the motor is reversible, control being by means of a small switch which is on the casing within reach of the operator's thumb and finger. Because of this feature the machine can also be used for tapping.

In the arrangement of the chuck the manufacturers have adopted a method of



TEMCO MOTOR DRILL

construction which is unlike anything else of its kind and which makes for the highest possible efficiency. So that the chuck can be easily loosened or tightened without the necessity for using a wrench or a key, the whole lower portion, including the bevel gear through which the spindle is driven, can be "broken over," to use the maker's expression, the chuck then lying at right angles with the rest of the drill and having a squared portion of its shaft in a squared receptacle provided for the purpose. Another distinctive feature of the



DUNTLEY "MIDGET" MODEL

Temco is that provision is made for the mounting of a small emery wheel on the driving gear shaft. Thus, the workman can have at his hand a means for sharpening the drills that are being used. The Temco company also supplies a valve grinding attachment to fit the drill.

The overall length of the Temco drill, including the chuck, is but 15 inches and the weight of the whole apparatus is 11 pounds. Its capacity in wood varies from holes ½- to ¾-inch in diameter, and in steel it will drill holes up to ⅜ of an inch in diameter; in cast iron or thin sheet steel it will tap holes up to 3/16 inch in diameter. Under maximum load the energy consumed is about 200 watts and the speed of the spindle running idle is about 900 revolutions a minute. As is the case with many of the other drills, the Temco will operate on either alternating or direct current and is supplied for either 110 or 220 volts.

As the name of the manufacturer implies, the tool produced by the Valve Seating Tool Co., of Southport, Conn., is virtually two tools in one. It is both a compact electrically-operated drill with the drill spindle concentric with the motor armature and a valve grinding tool providing the necessary semi-rotary motion required for such work. As the illustration shows, the device is fitted with a convenient handle at the top and also with two side handles with which the operator can hold the tool securely when it is used as a drill. The motor is started and stopped by means of a small switch which is placed on the head of the motor casing. The gearing by means of which the rotary or semi-rotary motion is imparted to the drill or the screwdriver bit, as the case may be, is located in the chuck. The tool can be supplied to operate on either alternating or direct current and is furnished complete with the necessary plug and flexible cord for attachment.

Economy of Electric Drilling.

One feature of electrically-operated shop tools that is likely to be overlooked by the average person is that immediately the work is finished the cost of operating the tool stops. Hence, though the actual cost of operating such a device will appear on the monthly bill for current, its significance can only be gauged by balancing against it the cost of doing similar work with hand tools. Another feature is that with such tools, the shop is left clear; overhead shafting and belts are conspicuous by their absence; at the same time, their cost and their danger to operatives is eliminated.

Ball Valve Reseating Made Simple.

A ball valve seating that is leaky can be made perfectly tight again by the simple process of tapping the ball into the seat until the pressure makes a perfect joint. Of course, if the ball is of brass this is impracticable, as the ball would be as easily affected as the seat; but with a steel ball and a seating of softer metal it is a simple matter. If the ball is corroded or imperfect a new one can be substituted, and if it does not seat exactly right it can soon be made to do so.

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WHY USE 30-HORSEPOWER TO PULL ONE-HORSE LOAD?

Contrasts in Motive Power That Look Queer but Are Easily Explained—What the Motor Does That the Horse Cannot Do.

The difference between a mechanical horsepower—the conventional unit of measurement of the energy developed by a motor—and the power of a flesh-and-blood horse has been commented upon often enough so that most people who are interested in matters mechanical understand that there is very little connection; that a horse actually can develop several times a conventional horsepower for a brief period, while there is no elasticity at all to a mechanical horsepower, any more than there is to the length of a yard-stick. Also it is more or less well known that James Watt, who was father to the horsepower—necessity for a unit of measurement was its mother—adopted the term and the figures to which it applies because he had no way of expressing the energy put forth by his steam engines and had to evolve a way of his own for doing so. But after all this has been more or less thoroughly digested there remains something that makes some people ask questions which they can't answer for themselves.

"There's an automobile delivery wagon out there," says one of the puzzled. "And on the brass plate on the front end is marked the carrying capacity—2,000 pounds. Now, what's the horsepower of the motor?"

"The motor is rated at 30 horsepower, but will develop something more than that when speeded up."

Different Powers for the Same Load.

"Well, never mind the power it will develop when speeded up. Let it go at 30 horsepower. Now look down the street. There comes a wagon that is loaded with one ton of coal, and there's one horse hitched to the front end of it. He doesn't seem to be having the slightest trouble moving the load along, does he? And he'll pull it right up the hill up the street without hurting himself a bit. Making due allowance for the fact that a horse can "turn up" five or six horsepower if he has a mind to, where do you get off with the 30 horsepower in the motor truck of the same carrying capacity? I know the motor wagon's faster, but I know that if that horse was to exert his five or six horsepower he could go a whole lot faster than he's going now. Now, how do you justify the use of that 30 horsepower?"

A motor of 30 horsepower, to take a common rating, certainly is plenty big enough for a one-ton vehicle; the work could be done with a good deal less. But there are very good reasons for the instalment of a motor of that size. To begin with, let it be understood that a motor having the same energy as a horse and installed in a one-ton wagon could do about what the horse does, and in very much the same way. By propelling the vehicle at the slow rate at which it is pulled by the animal the motor would be running at much less than its maximum power. By opening the throttle and increasing the power of the motor the speed would be increased to the maximum attainable by the horse—or even more, probably, for a motor is better for speed than a work horse. When climbing a hill the motor would have to do exactly what the horse does—pull very hard and move the vehicle very slowly. And just here it is pertinent to remark that the motor would be working right at the peak of its capacity, assuming the hill to be a fairly steep one, just as the horse would be doing, and that is something that is not conducive to long life and the best every-day results from either equine or engine.

Added Power Permits Greater Speed.

Suppose, now, that it is deseired to hurry up the one-ton load. It is possible to put on another horse, and so slightly increase the speed, especially on the hills; but beyond a slight increase it is not possible to go, for the simple reason that after the load on each horse has been reduced to a certain point two horses can't move any faster than one horse, any more than two men can run faster than one man. There is a slight gain due to the fact that the two horses will endure longer than one, but even this is of limited value.

With the motor things work out much better when power is increased. Speed can be "jacked up" until the vehicle moves just as fast as it is safe and practicable to move the load. Of course, it requires more power to do this than to move slowly, and if it is desired to maintain the same margin of power as the horse maintains—the parallel might as well be carried through—it is easy to see that the figures will grow rapidly. It is not at all desirable to make a motor work at the very top of its power any more than can be helped. To be sure, it often is done with a horse, but that is because horses have to be taken just as they come, and it pays better to overwork one horse occasionally than to greatly underwork two horses nearly all the time. It is easy, however, to make a motor sufficiently powerful without undue weight, so that it will be working well below maximum capacity all the time.

The extra power of the motor is necessary not to move the load on the level, which could be done at the best speed of the horse with a maximum power equal to that of the horse, but to maintain the proportionate speed increase on hills; to make possible rapid acceleration from a stand to maximum speed rather than the slow acceleration rate of a horse; to have power for getting the machine out of mud-holes or other bad places; and to insure that under all except the most unusual conditions the engine will be working well below its maximum power.

How Bad Roads Alter the Situation.

The power required for pulling out of bad spots in the road is something that demands special consideration. In the case of a horse and wagon, if the wagon is in the mud the horse usually is on comparatively firm ground, or can be put there if necessary. In the case of the motor wagon the vehicle and its power are all in the same boat, so to speak, and cannot be separated. Therefore the full power of the engine may be required to do what the horse might do with a good foot-hold. The fact that the motor vehicle carries the motive power helps to make it harder to pull out of a bog.

If people who use motor trucks were content to stick to horse speeds under all working conditions they could get along with motors of approximately the same power as actual horses. But a motor truck moving at horse speed with a horse load would satisfy nobody at all. Further, a motor differs from a horse in that, while nature does a great deal for the horse in the way of building up that which has been torn down by abnormal strains, a motor has to have a different kind of attention.

Business Man Desires to Save Time.

So there is nothing to be done but to make a motor of such capacity that it almost never will be forced to strain itself, so to speak. The initial cost of the comparatively slight additional poundage and the expense of carrying it around are considerably less than the expense of maintenance of a motor that is constantly kept going at something approaching its maximum power.

The whole thing simmers down to the fact that the chief aim of the business man is to save time, and in order to save time in the transportation of merchandise it is essential to have power. And while 30 horsepower sounds big as compared with even the maximum power of one horse, the difference really is small if the difference in the comparative efficiency of the two motors—one of metal and the other of muscle—are compared, as they inevitably are, on the books where profits and losses are set down.

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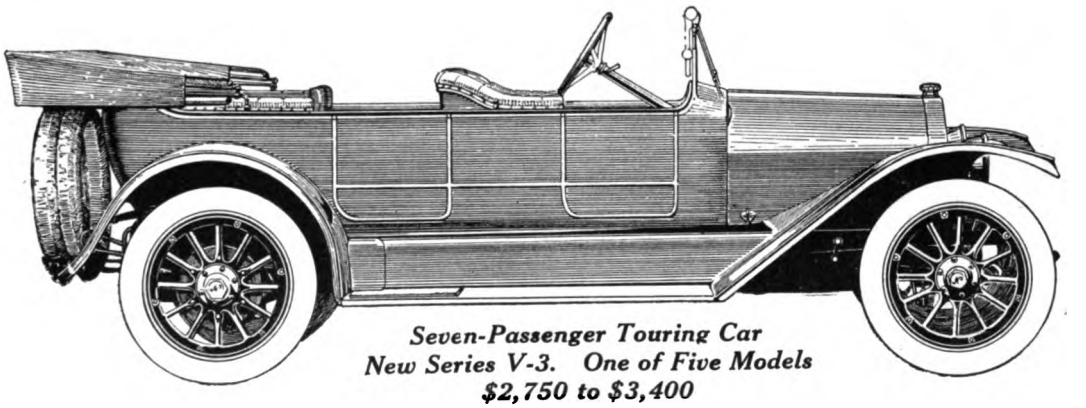
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1,065,413. Motor Vehicle. Eddy R. Whitney, Philadelphia, Pa., assignor to Commercial Truck Company of America, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Feb. 26, 1909. Serial No. 480,084. (Differential removable with axle casing cover.) 7 claims.

1,065,444. Vehicle Lamp. George G. Greenberg, Chicago, Ill. Filed Apr. 19, 1909. Serial No. 490,668. (Lamp for license holder.) 3 claims.

1,065,452. Apparatus for Hydraulically Storing and Delivering Hydrocarbon Oils. William G. Latimer, Detroit, Mich., assignor to E. B. Cadwell & Company, Detroit, Mich., a Copartnership. Filed Jan. 19, 1912. Serial No. 672,182. (Handling oil by water pressure.) 4 claims.

1,065,467. Muffler Cut-Out. Arthur Piel, New York, N. Y. Filed Apr. 13, 1910. Serial No. 555,255. (Muffler cut-out with flap valve.) 7 claims.

1,065,491. Regulator for Multiple Cylinder Engines. Edward A. Zolle, Minneapolis, Minn., assignor to Moore Carving Machine Company, Minneapolis, Minn., a Corporation of Minnesota. Filed June 3, 1911. Serial No. 631,185. (Governor for motor with separate charging pumps.) 13 claims.

1,065,498. Two-Part Fastener for Vehicle Tops, and the Like. Charles W. Beck, Rockville, Center, N. Y., assignor, by mesne assignments, to Michigan Motor Specialties Company, Detroit, Mich., a Corporation of Michigan. Filed Sept. 27, 1911. Serial No. 651,510. (Button recessed in fastening.) 2 claims.

1,065,503. Carburetter. John Byrom, Liverpool, England. Filed June 3, 1912. Serial No. 701,180. (Floatless carburetter.) 4 claims.

1,065,537. Vehicle Wheel. Andrew W. Livingston, Oakland, Cal., assignor to Standard Steel Wheel and Tire Armor Company, Oakland, Cal., a Corporation of Arizona. Filed Sept. 25, 1911. Serial No. 651,200. (Wheel with corrugated steel spokes.) 1 claim.

1,065,619. Explosive Engine. Raymond C. Mitchell, Springfield, Ohio. Filed Nov. 4, 1912. Serial No. 729,301. (Valve-operating mechanism.) 4 claims.

1,065,640. Fuel Vaporizing Device. John A. Thompson, Oskaloosa, Iowa. Filed May 10, 1912. Serial No. 696,397. (Electrically heated carburetter.) 3 claims.

1,065,668. Automobile. George W. Dunham, Detroit, Mich., assignor to Chalmers Motor Company, Detroit, Mich., a Corporation of Michigan. Filed Dec. 2, 1910. Serial No. 595,254. (Leather boot for closing pedal opening in footboard.) 1 claim.

1,065,700. Lamp Attachment for Automobiles. Robert S. Matheson, Lingayen, Philippine Islands. Filed Oct. 2, 1911. Serial No. 652,297. (Lamps movable with steering gear.) 4 claims.

1,065,708. Engine Starter. August C. Morgan, Groom, Tex. Filed July 13, 1912. Serial No. 712,551. (Pedal-operated ratchet starter.) 7 claims.

1,065,713. Resilient Wheel for Road Vehicles. James O'Reilly, Sr., and James O'Reilly, Jr., Hunters Hill, Sydney, New South Wales, Australia. Filed July 1, 1912. Serial No. 706,969. (Wheel with coiled springs around spokes.) 2 claims.

1,065,726. Adjustable Headlight. Henry E. A. Roche and Cleophas Roy, Hawkeshury, Ontario, Canada. Filed Sept. 19, 1912. Serial No. 721,289. (Headlights moving with steering gear.) 1 claim.

1,065,758. Device for Adjusting Tire Chains. William E. Woodwell, Pittsburgh, Pa., assignor of one-fourth to John K. Woodwell, Pittsburgh, Pa. Filed Dec. 9, 1912. Serial No. 735,627. (Clip for holding cross chains.) 7 claims.

1,065,784. Automobile Headlight Control. Clarence M. Crum, Hannah, N. D. Filed Oct. 1, 1912. Serial No. 723,382. (Headlights moving with steering gear.) 1 claim.

1,065,787. Repair Device for Pneumatic Tires, etc. Timothy C. Dobbins, Los Angeles, Cal. Filed Sept. 18, 1911. Serial No. 649,933. (Blow-out patch.) 12 claims.

1,065,795. Spring Tire. Porter C. Fox, Spokane, Wash., assignor to The Fox Company, Inc., Spokane, Wash., a Corporation of Washington. Filed Jan. 24, 1912. Serial No. 673,007. (Spring-backed tire.) 2 claims.

1,065,836. Inner Tube for Pneumatic Tires. Alfred Raymond and Albert Raymond, Washington, D. C. Filed May 26, 1913. Serial No. 769,867. (Three-part inner tube.) 4 claims.

1,065,849. Pneumatic Tire. George A. Shaw, Barberton, Ohio. Filed Oct. 22, 1912. Serial No. 727,241. (Pneumatic tire with metal band in tread.) 1 claim.

1,065,850. Starting Device for Engines. Henry M. Sheer, Quincy, Ill. Filed Nov. 22, 1912. Serial No. 732,974. (Ignition starter.) 16 claims.

1,065,854. Vehicle Sign. Venemon Lawrence Wallace, Salt Lake City, Utah. Filed Feb. 24, 1912. Serial No. 679,790. (License bracket and lamp.) 2 claims.

1,065,862. Electrical Igniting Device for Explosive Engines. Arthur R. Bullock, Cleveland, Ohio, assignor, by mesne assignments, to The Igniter Appliance Company, Cleveland, Ohio, a Corporation of Ohio. Filed Jan. 15, 1904. Serial No. 190,525. (Magnetic spark plug.) 10 claims.

1,065,886. Process of Producing Radiator Sections. Ivar A. Randel, Chicago, Ill. Filed Jan. 24, 1912. Serial No. 673,056. (Fusible core process for radiator manufacture.) 9 claims.

1,065,905. Steering Gear. Emil Gnoeth, Madisonville, Ohio, assignor to William F. Harmon, trustee, Cincinnati, Ohio. Filed June 3, 1912. Serial No. 701,422. (Double worm steering gear.) 11 claims.

1,065,915. Cushioned Wheel. Emilio Bronimann, Santa Rosalia, Chihuahua, Mexico. Filed Dec. 7, 1911. Serial No. 664,486. (Wheel with pneumatic cushions.) 1 claim.

1,065,916. Carburetter. Clement Brown, Birchfield, Birmingham, England. Filed Nov. 14, 1910. Serial No. 592,314. (Double piston throttle control.) 2 claims.

1,065,923. Igniting Mechanism for Explosive Engines. William F. Davis, Kansas City, Kans., assignor to McKeen Motor Car Company, Omaha, Neb., a Corporation of New Jersey. Filed Mar. 3, 1910. Serial No. 547,025. (Make-and-break ignition system.) 14 claims.

1,065,942. Vehicle Wheel. Ernest Hopkinson, East Orange, N. J. Filed Nov. 15, 1910. Serial No. 592,446. (Rim-fastening device.) 8 claims.

1,065,948. Carburetter. Gaston Paul Jean Lion, Levallois-Perret, and Auguste Eugene Brillie, Paris, France. Filed Dec. 5, 1907. Serial No. 405,259. (Exhaust heated carburetter for heavy fuel.) 9 claims.

1,065,949. Anti-Skid Stud. Maxime Lorme, London, England. Filed Nov. 16, 1912. Serial No. 731,890. (Rough-headed stud.) 2 claims.

1,065,959. Starting and Lighting Apparatus for Motor Vehicles. Morris Moskowitz, Montclair, N. J. Filed Dec. 13, 1912. Serial No. 737,485. (Electric starter and dynamo with friction drive.) 2 claims.

1,065,964. Gasifier for Liquid Fuels. Stanley H. Page and Charles J. Belden, San Francisco, Cal., assignors to Union Gas Engine Company, San Francisco, Cal., a Corporation of California. Filed Jan. 10, 1913. Serial No. 741,205. (Exhaust heated carburetter for heavy fuels.) 7 claims.

1,065,977. Carburetter. Elmer S. Smith, Boundbrook, N. J., assignor, by mesne assignments, to International Accessories Manufacturing Company, Wilmington, Del., a Corporation of Delaware. Filed May 27, 1911. Serial No. 629,864. (Carburetter with rotatable fuel receptacle.) 14 claims.

1,065,978. Tire. William Thomas Smith, Bolton, England. Filed June 24, 1907. Serial No. 380,571. (Tire of layers of canvas under tension.) 2 claims.

1,065,982. Vehicle Propelled by a Combination of Electrical and Mechanical Power. Willis N. Stewart, London, England, assignor of one-half to Frank Harris, London, England. Filed Jan. 19, 1909. Serial No. 743,143. (Gasolene-electric driving system.) 8 claims.

1,065,996. Transmission Gearing. Alfred N. Adams, Stockton, Cal. Filed Aug. 23, 1911. Serial No. 645,593. (One sliding gear meshing with successive gears of a cone.) 4 claims.

1,066,009. Wheel Runner. George E. Hersey, Cleveland, Ohio. Filed Sept. 4, 1912. Serial No. 718,534. (Sleigh-runner to fasten to automobile wheel.) 1 claim.

1,066,014. Engine Starter. Percy W. Hodgkinson, Rochester, N. Y., assignor of one-half to Jacob C. Lombard, Rochester, N. Y. Filed Apr. 20, 1912. Serial No. 622,418. (Manually operated ratchet starter.) 4 claims.

1,066,037. Automobile Horn. Nicoll C. Oddo, Middletown, N. Y. Filed Sept. 20, 1912. Serial No. 721,379. (Hand operated diaphragm horn.) 2 claims.

1,066,038. Automobile Horn. Nicoll C. Oddo, Middletown, N. Y. Filed Sept. 24, 1912. Serial No. 722,117. (Hand-operated diaphragm horn with automatic valve in bell.) 12 claims.

1,066,047. Spring Wheel. William J. Peterwe, Macy, Neb. Filed Nov. 27, 1912. Serial No. 733,3[illegible]. (Coiled springs under rim.) 3 claims.

1,066,062. Gas Engine Valve Mechanism. Martin A. Thiel, Mount Vernon, Ohio, assignor to The C. & G. Cooper Co., Mount Vernon, Ohio, a Corporation of West Virginia. Filed Sept. 22, 1910. Serial No. 583,298. (Combination of poppet and cylinder valves for regulating fuel admission.) 5 claims.

1,066,072. Motor Vehicle. Alphons Bonas, Coulterville, Ill. Filed Aug. 20, 1912. Serial No. 716,961. (Four-wheel drive system.) 5 claims.

1,066,124. Resilient Wheel. Harry Leap, Chicago, Ill. Filed Mar. 25, 1912. Serial No. 685,944. (Wheel with curved spring spokes.) 3 claims.

1,066,151. Liquid Level Controlling Apparatus. Rienzi Rice, Worcester, Mass. Filed Dec. 16, 1908. Serial No. 467,787. (Float controlled fuel valve for carburetters.) 3 claims.

1,066,160. Internal Combustion Engine. Joseph I. Stevenson, St. Louis, Mo. Filed Dec. 4, 1911. Serial No. 663,886. (Removable water-jacketed cylinder head.) 2 claims.

1,066,168. Explosion Engine. Louis C. Vanderlip, Elkhart, Ind. Filed Apr. 21, 1910. Serial No. 556,834. (Two-diameter cylinder.) 5 claims.

1,066,189. Apparatus for regulating the Pressure at Which Air is Blown Into Internal Combustion Engines. Ludwig Thaddaus Ebermann, Augsberg, Germany, assignor to Maschinenfabrik Augsburg Nurnberg, Aktiengesellschaft, Augsburg, Germany, a Corporation of Germany. Filed Feb. 27, 1913. Serial No. 751,179. (Air-control for fuel injection system of Diesel and like engines.) 6 claims.

1,066,191. Spring Vehicle Wheel. William H. Fahrney, Chicago, Ill. Filed Dec. 14, 1912. Serial No. 736,729. (Springs between inner and outer rims.) 3 claims.

1,066,228. Spring Wheel. Herschel A. Schermerhorn, Shabbona Grove, Ill. Filed Feb. 19, 1913. Serial No. 749,322. (Springs between inner and outer rims.) 2 claims.

1,066,235. Automatic Speed Controlling Means for Engines. Zoltan Tamassy, Cleveland, Ohio. Filed Dec. 4, 1911. Serial No. 663,707. (Centrifugally operated throttle governor.) 1 claim.

1,066,248. Starting Primer for Motors. Gilman W. Brown, West Newbury, Mass., assignor of one-half to Harriet L. Maddock, Haverhill, Mass., and one-half to Horace W. Brown, West Newbury, Mass. Filed Oct. 30, 1912. Serial No. 728,708. (Primer with separate fuel tank.) 18 claims.

1,066,255. Shock Absorber. Paul J. Cubbison and Robert G. McFarland, New Castle, Pa., assignors of one-third to Harry B. Cubbison, New Castle, Pa. Filed Aug. 15, 1911. Serial No. 644,150. (Hydraulic shock absorber.) 6 claims.

1,066,267. Vehicle Wheel. August Gerlert, New York, N. Y. Filed Aug. 7, 1912. Serial No. 713,781. (Wheel with curved spring spokes.) 2 claims.

1,066,269. Vehicle Curtain. Willard H. Goodfellow, Detroit, Mich. Filed Dec. 16, 1912. Serial No. 737,001. (Curtain construction for folding tops.) 5 claims.

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GO WITH THE CROWD

LBA

TRADE MARK REGISTERED

Storage Batteries

have been selected as standard equipment by all but a handful of automobile manufacturers.

L B A Batteries are not sold on price—they COST MORE than the imitations, though they may LOOK alike.

That price is forgotten in the need of real worth is proven by the fact that L B A Batteries are regularly found in cars made by the following list of manufacturers.

A

Abbott Motor Co.....Detroit, Mich.
Adams-Lancia Co.....New York City
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co., Elmira, N. Y.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Appetson Bros. Automobile Co. Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co..Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.

B

Bartholomew Co.....Peoria, Ill.
Benton Motor Car Co.....Benton, Ill.
Berg Carriage Co., L.....Dallas City, Ill.
Briggs-Detroiter Co.....Detroit, Mich.
Buckeye Mfg. Co.....Anderson, Ind.

C

Canadian Standard Auto & Tract. Co., Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works....Racine Jct., Wis.
Chadwick Engineering Works. Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
Chevrolet Motor Co.....Flint, Mich.
Colby Motor Car Co.....Mason City, Ia.
F. Coleman Carriage & Harness Co., Ilion, N. Y.
Commerce Motor Truck Co...Detroit, Mich.
Corbitt Automobile Co....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, O.
Crow Motor Car Co.....Elkhart, Ind.
Jas. Cunningham Son & Co..Rochester, N. Y.

D

Geo. W. Davis Carriage Co...Richmond, Ind.
De Dion Bouton.....New York City
Dorris Motor Car Co.....St. Louis, Mo.

E

Elkhart Carriage & Harness Co. Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, O.

F

F. A. L. Motor Car Co.....Chicago, Ill.
F. I. A. T. Company...Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.

G

Gramm-Bernstein Co.....Lima, O.
Gramm Motor Truck Co.....Lima, O.
Gramm Motor Truck Co...Walkerville, Ont.

H

Havers Motor Car Co....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co..Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Howard Motor Car Co....Connersville, Ind.
Hupp Motor Car Co.....Detroit, Mich.

I

Imperial Automobile Co.....Jackson, Mich.

J

Jackson Motor Car Co.....Jackson, Mich.

K

Kelly-Springfield Motor Truck Co., Springfield, O.
King Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Krit Motor Car Co.....Detroit, Mich.

L

Lancia Co.....Turin, Italy
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co..Connersville, Ind.
Locomobile Company of America., Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.

M

W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co....Oshawa, Ont
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd. St. John, N. B.
Martin Carriage Works.....York, Pa.
Martindale & Millikan.....Franklin, Ind.
Mason Motor Car Co.....Waterloo, Ia.
Maxwell Motor Car Co.....Dayton, O.
Mercer Automobile Co.....Trenton, N. J.
Meteor Motor Car Co.....Shelbyville, Ind.
Metzger Motor Car Co.....Detroit, Mich.
Mitchell-Lewis Motor Car Co...Racine, Wis.
Moline Automobile Co.....East Moline, Ill.
Motor Car Mfg. Co.....Indianapolis, Ind.

N

Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co. Indianapolis, Ind.
Nordyke & Marmon Co...Indianapolis, Ind.
Norwalk Motor Car Co. Martinsburg, W. Va.
Nova Scotia Carriage Co....Kentville, N. S.
Nyberg Automobile Works...Anderson, Ind.

P

Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co...Detroit, Mich.
Palmer & Singer Mfg. Co., Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, O.
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.

R

Regal Motor Car Co.....Detroit, Mich.
Renault-Freres Selling Co....New York City
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada, St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.

S

Sayers & Scoville Co.....Cincinnati, O.
Seagrave Co.....Columbus, O.
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co. New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works, South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, O.
Stafford Motor Car Co.....Kansas City, Mo.
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, O.
Stegeman Motor Car Co....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell)..Dayton, O.
Studebaker Corporation.....Detroit, Mich.
Stutz Motor Car Co.....Indianapolis, Ind.

U

U. S. Carriage Co.....Columbus, O.

V

Vandewater & Company....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.

W

Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
Wichita Falls Motor Co..Wichita Falls, Tex.
Willys-Overland Co.....Toledo, O.
Winton Motor Car Co.....Cleveland, O.

Z

Zimmerman Mfg. Co.....Auburn, Ind.

The agent who tries to sell you a car equipped with an imitation of the L B A Battery and tells you it is "just as good," knows better.

Appearance cuts small figure. The imitation may look just as well as the L B A, but it's the "insides," the performance that counts.

Your Starting and Lighting equipment would be worth no more than junk without a reliable Storage Battery.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 136 W. 52nd St.
Detroit Branch: 1191 Woodward Ave.
Chicago Branch: 2241 Michigan Ave.
San Francisco Branch: 243 Monadnock Bldg.
Indianapolis Branch: 438 and 439 Indiana Pythian Bldg.

Depots in all Principal Cities in the United States, Canada and Mexico

(74)

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TUTO HORN



$15

LOOK FOR
Elyria-Dean
TRADE MARK
WHERE QUALITY'S SEEN

In the manufacturing of Elyria-Dean electrical products we doubly fortify our distributors with a salable accessory for which the demand is already created, and through our advertising and sales making campaign we place Elyria-Dean distributors in direct touch with automobile owners everywhere.

TUTO HORN

The ideal warning signal for all cars, formerly selling at $25 and now listing at $15.

The TUTO HORN is a distinctly TWO-TONE signal in all that the name implies. It performs every function of a warning signal intelligently and unfailingly.

Ordinary pressure on push button instantly sends forth an adequate danger warning which is sufficient nine times in ten. With other electric signals it is necessary to give minimum or maximum warning regardless of the conditions ahead.

To meet unusual conditions you simply press the push button way down and secure the harsh, abrupt car-coming warning which will instantly clear the road under any traffic conditions.

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REXO HORN



$8

LOOK FOR
Elyria-Dean
TRADE MARK
WHERE QUALITY'S SEEN

In all things electrical the name Elyria-Dean carries a known guarantee of goodness and efficiency that is a valuable selling asset in competition. During the past year we made and delivered over 50,000 TUTO and REXO HORNS. During the coming twelve months we will outsell any other make or type of warning signal two to one.

REXO HORN

The big-little signal for medium and low priced cars. Built, tested and guaranteed to the Elyria-Dean standard and selling at $8. ready to attach.

The REXO HORN is at once the lowest priced high quality electrical warning signal in the world.

The construction, workmanship and finish is equal to any warning signal regardless of price. The warning signal delivered is fully adequate to meet any driving condition.

Elyria-Dean distributors everywhere endorse and recommend this REXO HORN. It's the one electric signal that will outsell any other make on price, efficiency or guarantee.

Our new selling campaign is now under way. We are sending the Elyria-Dean story to car owners wherever cars are sold. Wide-awake dealers will enjoy a profitable Fall business by adding our line of warning signals. Our selling campaign and the new Agency agreement will be sent to responsible dealers on request. Let us add your name to our mailing list. Our campaign will help you very materially to secure the accessory business in your territory.

DEAN ELECTRIC COMPANY

503 Olive Street, Elyria, O.

Kansas City, Mo. San Francisco, Cal.

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American made for American trade

New Departure Ball Bearings

THE complete success of New Departure ball bearings in meeting the demands of the American car manufacturer for a bearing of quality, capacity, efficiency and durability, is attested by the fact that **two-thousand skilled mechanics are operating ten and a half acres of modern machinery, producing ten-thousand guaranteed bearings per day.**

Can we send you Catalog?



The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit

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To the Manufacturers Who Have Placed their Contracts for the Speedometer Equipment of their 1914 Cars

You should investigate the guarantee that the manufacturer of your speedometer gives with it.

Anything other than a permanent guarantee is not fair to you or to your car-purchasers.

The modifying of a guarantee—after the adoption of a speedometer as part of regular equipment—so that it becomes infinitely less attractive to prospective car-owners—a change which substitutes limited mileage for a long period of time—cannot react to your interests.

The guarantee under which the

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

is sold is the same today as when the CORBIN-BROWN was first placed on the market. It is a real guarantee because it is a permanent guarantee.

The Permanent Corbin-Brown Guarantee

The Corbin-Brown Speedometer is guaranteed for twelve months from date of sale. We will replace any defective parts due to mechanical defects or workmanship, if returned prepaid to our factory, or branches subject to our inspection.



Write for Catalog

THE CORBIN SCREW CORPORATION

THE AMERICAN HARDWARE CORPORATION, Successors

NEW BRITAIN, CONN.

BRANCHES: New York Chicago Philadelphia

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THE SUPERIOR BRAKE LINING

Ambesco

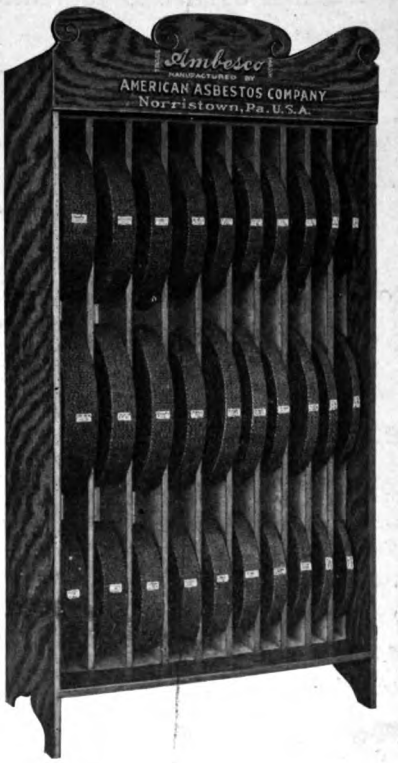
We Will Help You Carry a Complete Line of Ambesco

DETERMINED to have a full and complete line of Ambesco Brake Lining within easy access of every motorist in this country, we have adopted a selling plan that enables legitimate dealers and jobbers in every center to carry such a line without burdening himself or his business financially.

Illustrated herewith is the new Ambesco Brake Lining Rack which contains an ample stock of every size of brake lining made. All the odd sizes as well as the standard sizes are represented here, so that you dealers and jobbers who avail yourselves of our offer need never lose a profit because of not having stock.

Not only does our co-operative plan make it easy for you to carry this full line, but our plan also looks to the advertising and selling of this Ambesco in your local territory. In other words, we simply have to help you move this stock in order that our plan may succeed.

No manufacturer has ever gone farther to merchandise any commodity than we are going in the exploiting and marketing of Ambesco—and every wise, legitimate dealer or jobber in this country will do well to get in touch with us at once. In our plan we take practically all the chances—your only chance is to win.



Remember in considering brake lining that it is a staple article which offers you a big profit—and that it is only necessary for you to carry a complete line of a substantial and reliable MANUFACTURED product to corner most of the business of your territory.

Ambesco is manufactured by us from the raw stock to the finished product and we know that its quality is not only superior but absolutely uniform in every way.

Being certain of the product we now offer you a plan that will enable you to take full advantage of carrying a full and complete line, for which there is a real demand, without being forced to tie up a lot of money.

Doesn't this sound interesting? Write us—the details will interest you to a far greater degree.

AMERICAN ASBESTOS COMPANY, Norristown, Pa.

Dealers and manufacturers both---remember we are manufacturers also of Asbestos Friction Discs for Multiple Disc Clutches---also Asbestos Clutch Facing for Cone Clutches

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INSIST UPON Mosler SpitFire

RED TAG Plugs

PACKED IN THIS BOX & TAGGED FOR YOUR PROTECTION



We put a **RED GUARANTEE TAG** on every box containing a genuine Mosler **Spit Fire** platinum pointed plug. This is not merely a selfish bid for your business. It is for your protection – a means of identifying the best and most durable platinum pointed plug on the market. It distinguishes the genuine from the imitation — the superior from the inferior.

Look for the **RED TAG** and don't accept substitutes.

HAVE SAVED HUNDREDS OF THOUSANDS FROM ALL KINDS OF IGNITION TROUBLES

MADE TO FIT ANY ENGINE, ANY THREAD

010 **A. R. MOSLER & Co., MT. VERNON, N.Y.**

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SUBSTITUTING PORCELAINS IN RAJAH PLUGS NOT LEGAL

Added Light Thrown on Patent Licensing Situation — Court Holds Rajah Can Control Use Even if Not the Price of Plug.

When the United States Supreme Court ruled in the Sanatogen case that a manufacturer parts with all title to his goods when he sells them to a retailer, those who had been operating on a price-license system recognized it as a hard blow to price maintenance, but that the manufacturer does not part with all control of his produce was indicated this week in the United States District Court for the Southern District of New York The court held that the manufacturer still controls the use of its product and can restrain another from selling parts to be used in connection with the product.

The suit in question was brought by the Rajah Auto Supply Co., of Bloomfield, N. J., against the Rex Ignition Mfg. Co., of New York City, which, it was charged, had been selling porcelain parts with the knowledge that they were to be used in Rajah plugs. The court enjoined the Rex company and recognized the Rajah's right to specify what porcelain should be used in a Rajah plug.

Judge Ward in his opinion set aside the contentions of the Rex company that it did not know the porcelains were to be used in Rajah plugs.

"The complainan... fendant as a co... ground tha... knowin...

which a patented article shall be sold is ... a limitation as to the use of it and that ... such a case the sale is absolute and the ... striction invalid. In this way the case ... distinguished from the prior decision.

"In view of the marked diversity of ... ion among the judges of the highest ... in these two cases, an inferior court ... be confident. The defendant very ... gests in its brief that on the ... fore the court, if an injunctio... may as well be a final one ... agree on this point a final ... issued. In the meanti... preliminary injunct...

Dean Credito...

In an effort ... long establi... Elyria, O., a... tion, 20 of ... a protecti... as chair...

The ... A. L. ... banks, ... other c... fore W... Guardia... land, ... posi...

m... b... s...

Fighting to Maintain Quality

Court upholds us in our struggle against "just as good" substitute for Rajah quality.

Dealers Write for Particulars

RAJAH AUTO SUPPLY CO.

BLOOMFIELD, N. J.

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Hupmobile

Now Europe claims half of all the cars we can build for 1914

When we designed the Hupmobile we made it essentially an American car, for use under American conditions.

But Europe thinks the American Hupmobile such a good car, and so well suited to European requirements, that it stands ready to absorb half of the coming year's output of 1914 cars.

Can you imagine a tribute higher than this; or a more positive confirmation of our belief that the Hupmobile is the best car of its class in the world?

The Briton, the Frenchman, the German, pays $200 to $400 more for his Hupmobile than you do because he recognizes its high quality and its operating economy.

Likewise the Hupmobile buyers of South Africa, Australasia and New Zealand, where the Hupmobile has overcome an anti-American prejudice even stronger than that which exists in the European countries.

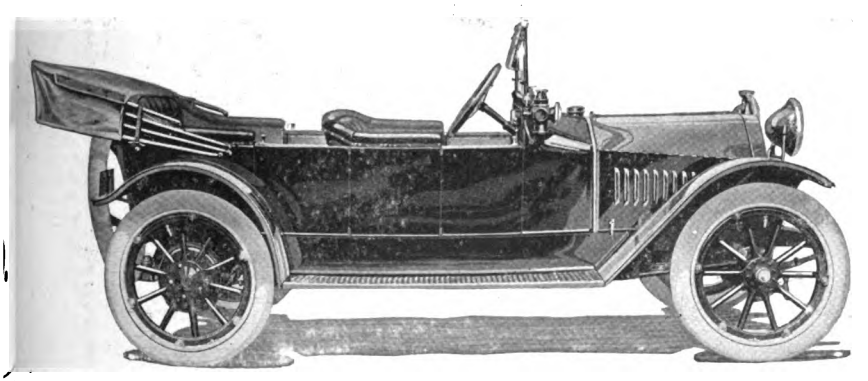
And in the Philippines — thousands of miles from home—the Hupmobile is as truly the car of the American family as here, as shown by the domination of its name on the registry lists.

Thus the belief that the Hupmobile is the best car of its class in the world rolls on to practically every section of the globe where automobiles are used.



The keen American in the Philippines - - - he, too, is loyal to the Hupmobile

Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit, Mich.



"32" Touring Car or Roadster—$1050 f. o. b. Detroit

In Canada, $1230 f. o. b. Windsor

SPECIFICATIONS—Four-cylinder, long-stroke motor, 3¼ x 5½ inches; unit power plant. Selective type transmission, sliding gears. Center control. Full floating rear axle. 106-inch wheel base. Tires, 32 x 3½ Q. D. Rear shock absorber. Magneto cover.

EQUIPMENT—Rain vision, ventilating windshield; mohair top with envelope; Jiffy curtains; speedometer; cocoa mat in tonneau; Prest-O-Lite; oil lamps; trimmings, black and nickel.

"32" Touring Car or Two-passenger Roadster with Westinghouse two-unit electric generator and starter; electric lights; oversize tires, 33 x 4 inches; demountable rims, extra rim and tire carrier at rear. $1200 f. o. b. Detroit.

In Canada, $1380 f. o. b. Windsor

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For FORD Cars

A perfect hand warmer



Driving With Cold-Benumbed Hands is Uncomfortable and Unsafe, Driving with the Warm-Hand-Wheel is Comfortable and Safe.

Dealers:—As a dealer you know that SUPPLY follows DEMAND. There's a demand—a mighty big one—for warm hands during fall and winter driving. Here's an accessory that means a profit for you. Supply the demand—this way—see the WARM HAND STEERING WHEEL.

Owners:—Remember last winter—every part of your body was warm enough **but your hands!** Numb. Chilled. Blue with cold. Yes, of course, you had fur gloves, but when you wore them they didn't keep you warm or allow easy working of the wheel. If you had this experience last winter—then you are the very man who will appreciate the WARM HAND STEERING WHEEL. If this is your first winter of driving—be wise. Don't get the ordinary motorist's winter experience.

THE WARM HAND STEERING WHEEL

Gives you more comfort for fall, winter and spring driving than you can possibly obtain by any other means. Here's how.

We furnish you complete, a new wooden steering wheel rim, with the heater installed (as indicated with illustration) and wire connection from wheel to magneto which furnishes the heat. To turn on the heat you insert the plug in socket nearest the ribbed part or heater on left-hand side of wheel. To turn off heat, remove plug and place in next adjoining socket.

The heating coil is composed of an indestructible metal tube in which is carried a heavily insulated heating wire. It is impossible to get a shock.

The rim we furnish is all ready to screw on in place of the rim you now have.

Write today for detailed description.

Satisfaction guaranteed.

Price $10.

Prepaid to any part of the United States.

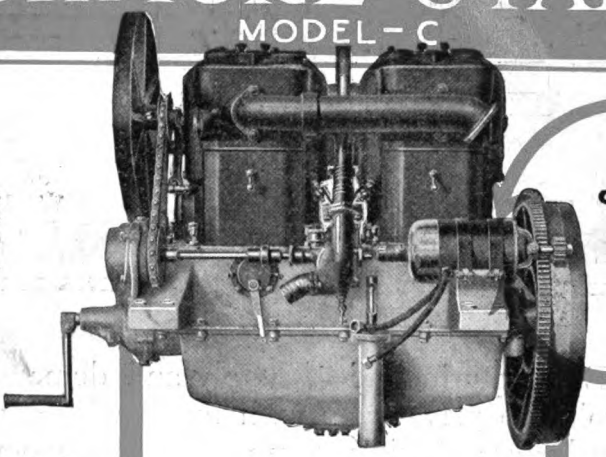
The Warm Hand Steering Wheel Corp., Inc., Poughkeepsie, N. Y.

Patented April 23, 1907; Feb. 11, 1908; April 2, 1912. Other patents pending.

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RUSHMORE STARTER

MODEL-C



Simplex "38," 4⅞ x 6½ in., with Rushmore Model C Starter. Spinning speed 100 r. p. m. using 90 amperes.

A Pigmy in size, but-!

The new Rushmore Starter, Model C, is only 5 inches in diameter: it would almost go under a hat.

Yet it spins a 6-cyl. 4 1-2 x 5 1-2 in. engine at 100 r. p. m., taking only 100 amperes at 5.6 volts. It develops a maximum of 1 1-5 horsepower at the flywheel rim. Its armature pinion meshes and unmeshes automatically with the flywheel gear---the user simply presses the switch, nothing else.



End View of Simplex Engine (Find the Starter)

The secret of the Rushmore Starter's power is chiefly that a low speed motor is more efficient than a high-speed motor. By minimizing the magnetic and commutator losses inseparable from high speed, and by eliminating the wasteful intermediate gears, it more than makes up for the seeming handicap of lower speed.

The Rushmore Starting and Lighting System is used on the following cars:

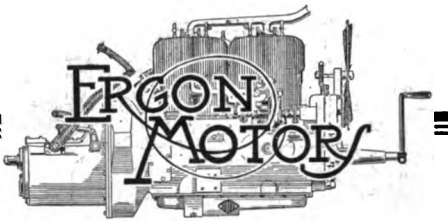
Simplex
Lancia
Knox
Regal
Mercer
Kline

Even the smallest detail of the Rushmore Starter is absolutely first-class: it comes from a factory which has never produced anything but good goods. Yet the smallness and simplicity of the machine enable it to be sold at an astonishingly low price. It spins any engine up to 6 cyls., 5 x 6 in., from 25 to 50 per cent. faster than any other starter using the same current. Its mechanical simplicity saves the manufacturer from $25 to $50 per car. And its rugged build and completely automatic action are just what the owner wants.

Samples for test now ready

RUSHMORE DYNAMO WORKS *Plainfield, N. J.*

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THE FUTURE

THE great principle of supply and demand is going to play havoc with many who apparently are letting temporarily unfavorable business conditions warp their saner judgment.

¶ Every order which is delayed in placing—every delivery specification which is set back or deferred means a rush and exhorbitant demands for deliveries sooner or later, which demand many part makers are going to be unable to meet promptly. The result will be delayed deliveries of complete cars.

¶ The manufacturers who use ERGON MOTORS, however, are going to be in better shape in so far as getting delivery on their motors is concerned. We always have prided ourselves on keeping to schedule and in case of need in being able to co-operate with our patrons in meeting extraordinary requirements.

¶ We have recently extended our manufacturing facilities and everything is in the best working order.

¶ This is an assurance of confidence to our present patrons—as well also an invitation to far sighted manufacturers to investigate our product, facilities for production and our business integrity.

Hazard Motor Manufacturing Company

Rochester, N. Y.

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Oldsmobile 1914

Established 1880 Incorporated 1899

THE dealer who sells the Oldsmobile is dealing in known values, and enjoys the prestige of leadership, together with the liberal profits that are always accorded a leader.

There is no question of Oldsmobile superiority. Everywhere it is recognized, and the dealer who sells it need never argue the point.

Wherever automobile men meet, the new Oldsmobile Model 54 commands their admiring comment, and it is frequently noted as remarkable that such a perfect car can be built and sold for such a price.

Combination Four or Five-Passenger Phaeton, Touring Body Type, $2975
Seven-Passenger Touring Body, $175 Extra
Limousine $4300

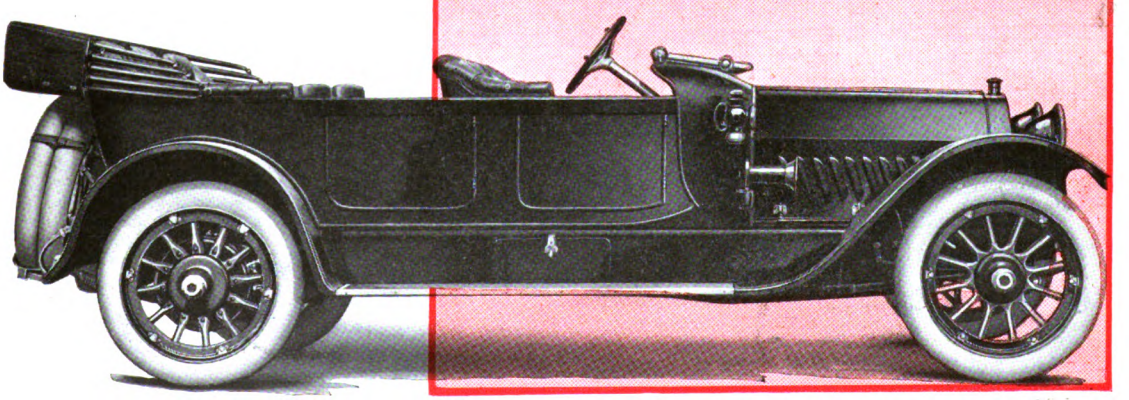
Our increased production for the season of 1914 permits us to allot territory to a few extra dealers.

Never in the history of this company have we been so well equipped to meet the demands of our dealers by prompt shipment of cars as ordered. We urge you to write us at once, if you are prepared to sell in your territory a car of the high standards of quality, material and design found in the Oldsmobile.

OLDS MOTOR WORKS, Lansing, Mich.

Equipment 1914 Oldsmobile Model 54

Combination electric and oil side and tail lamps, special Oldsmobile design. Special design Oldsmobile electric head lamps. Special design three-way adjustable ventilating windshield. Top, boot, and patent adjustable side curtains. 60 miles speedometer. Adjustable stem setting and winding Waltham clock. Rear tire irons, capacity for two tires. Demountable rims, one extra. Imported horse-hair tonneau mat. Motor-driven air pump. Famous Delco starting, lighting and ignition system. Electric light in tonneau. Extension electric trouble lamp. Tools, jack. Patented bow separating top holders. Adjustable auxiliary seats in seven-passenger. (Extra, at additional cost, wire wheels; special Oldsmobile touring trunks.) Motor, 50 horsepower, six cylinders, unit power plant, three-point suspension. Bore 4¼, stroke 5¼. Extreme length of four and five-passenger models, 16 feet. Extreme length of seven-passenger, 17 feet. Spring, front, semi-elliptic. Spring, rear, ¾-elliptic, underslung. Tires, 36 x 5, both front and rear. Gabriel snubbers. Klaxon horn.



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Better be SURE about getting MICHIGAN SERVICE on your crankshafts

YOU want MICHIGAN SERVICE on your crankshafts. You want that comfortable satisfaction that comes from knowing that your delivery requirements will absolutely be lived up to.

You want that practical satisfaction of knowing that the work will be right and that you won't have to turn down half of the shipment when it reaches you.

Our percentage of rejects for 1913 was less than TWO PER CENT. And our customers numbered some of the most exacting concerns in the industry.

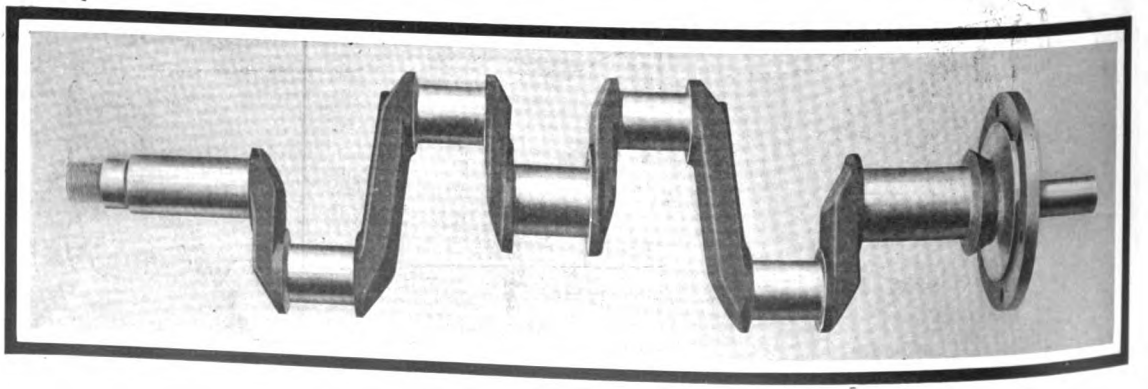
The reason is that we do the inspecting here—and do it so carefully, so rigidly that we leave no chance for the customer to find fault.

That's our way of doing business. Couldn't do business that way if we didn't have the best machine and tool equipment money can buy and then back it up with EXPERIENCE and "KNOW HOW."

Don't wait too long. Remember we never accept orders beyond our capacity. Our customers take no chances. That means no aggravating, money-losing delays.

Send your blue-prints and specifications along quickly and we'll give you speedy action.

MICHIGAN CRANKSHAFT COMPANY, Lansing, Mich.



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Prices for 1914

With Worm Gear Axle

5 Passenger Brougham, Detroit Duplex Drive	$3,000
4 Passenger Brougham, Rear Seat Drive	2,850
Gentlemen's Roadster	2,500

With Bevel Gear Axle

5 Passenger Brougham, Front Seat Drive	$2,800
4 Passenger Brougham, Rear Seat Drive	2,550
Victoria	2,300



Model 48, Detroit Duplex Drive

THE COMPANY BEHIND THE BEST SELLING ELECTRIC

The Detroit Electric is supreme among electrics. Not only in quality, but in numbers being built and in numbers being sold.

The profits of Detroit Electric dealers are double the profits of other electric dealers. For Detroit Electric sales are two for one over any other electric.

Several factors influence a dealer in selecting a car to handle. Not the least important is the company that builds the car. How long has it been in business? Is it sound financially? Is it laying its foundation for the future—expanding in the right direction?

The builders of the Detroit Electric possess a rare experience. Long before entering into the automobile business they had established an indelible reputation. This reputation they retain. Their commercial rating today is the highest possible for any company to have. It is the desired evidence that they have built wisely and well.

THE Detroit ELECTRIC

What a Large Output Permits

From the very start the builders of the Detroit Electric saw a big future ahead for any electric of quality. They realized that by the use of accurate machine methods, they could secure far greater quality than by near-accurate hand methods. They cut no corners at the expense of quality. They supplanted blacksmithing labor by the most modern machinery. A large output makes possible this system of improved manufacturing.

The Best Seller is the Best to Handle

The Detroit Electric for 1914 contains more new features than any other. It is better built than any other. It is built in our own factory—the largest electric pleasure car shops in the world—not merely assembled. In the electric car industry this means much.

Every dealer wants to handle a leader, whether an electric, a typewriter, an adding machine, or what not. A leader is easier to sell—generally it sells itself.

Dealers for the Detroit Electric, moreover, are among the most substantial and progressive men in their communities. They are men of wide vision. They look upon the representation for the Detroit Electric as a golden opportunity—and a permanent one.

We have a limited amount of open territory. It will repay you to get in touch with us.

ANDERSON ELECTRIC CAR COMPANY, Detroit, Mich.

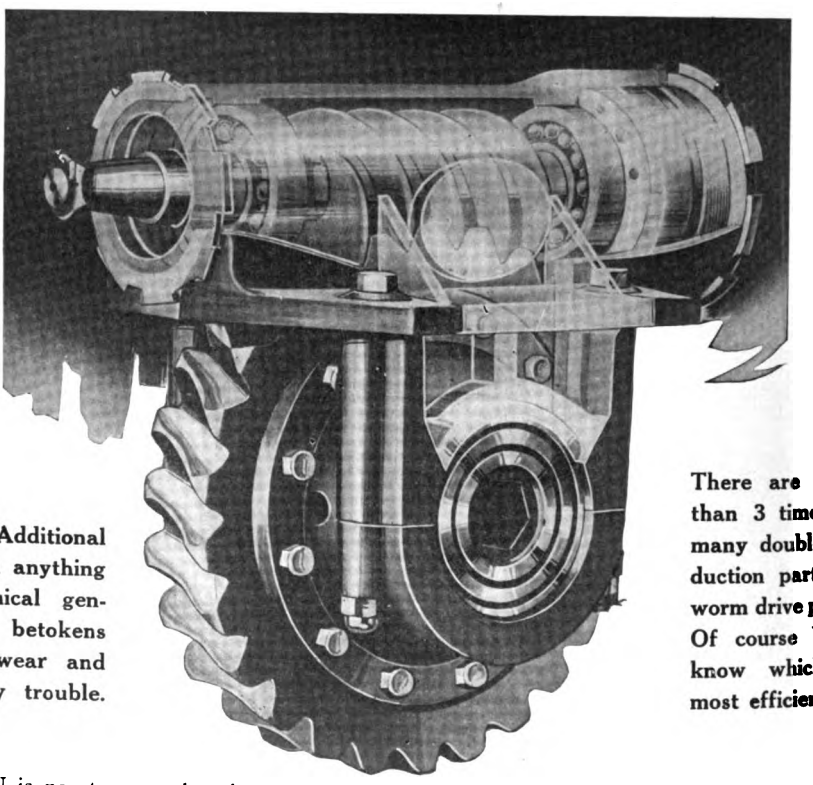
Builders of "The Detroit Electric"

Largest builders of electric pleasure vehicles in the world

Digitized by Google

YOU BUILD SILENCE, NEATNESS, SIMPLICITY AND EFFICIENCY INTO YOUR VEHICLES WHEN YOU EQUIP THEM WITH THE

SHELDON WORM DRIVE



Every Additional **part in** anything **mechanical** gen**erally** betokens **extra** wear and **possibly** trouble.

There **are more** than 3 **times as** many **double** reduction **parts as** worm drive **parts.** Of course **YOU** know **which is** most **efficient.**

A CHAIN is no stronger than its weakest link. Every nut, cotter, washer, head pin casting, forging, chain link and rivet is a necessary unit of the assembly it composes. The failure of one of those units may mean the wreck of your truck, and perhaps the damage of property and the loss of life.

Only one-third the number of parts required for a Worm Drive that are required for a two-step reduction of the chain driven type. This is convincing proof that, all things being equal, the single reduction Worm Drive has a three-to-one chance of giving better service than a two-step reduction with three times as many parts.

But all things are not equal. The Worm Drive is a single reduction, transmitting the power direct from the motor to the rear wheels. It is the only drive in which it is possible to secure this result.

The Worm Drive conserves power because it is a single reduction. Every moving power transmitting unit works in oil, reducing friction to a minimum.

Sheldon Worm Drive is non-adjustable. The Worm carrier is machined exactly true by specially constructed machines.

If the carrier is not true, the Worm can not be assembled. Once assembled the Worm and Worm Wheel can be removed and replaced without disturbing their alignment. No adjustment to tamper with.

It is not necessary to provide adjustment for wear. The slight wear of the imported Worm and Worm Wheel only adds to its efficiency.

Of course, the Worm and Worm Wheel wear out, but not during the life of one truck. The experience of the largest user of Worm Drives has proven this.

SHELDON AXLE COMPANY, WILKES-BARRE, PA.

CHICAGO
68 E. 12th Street

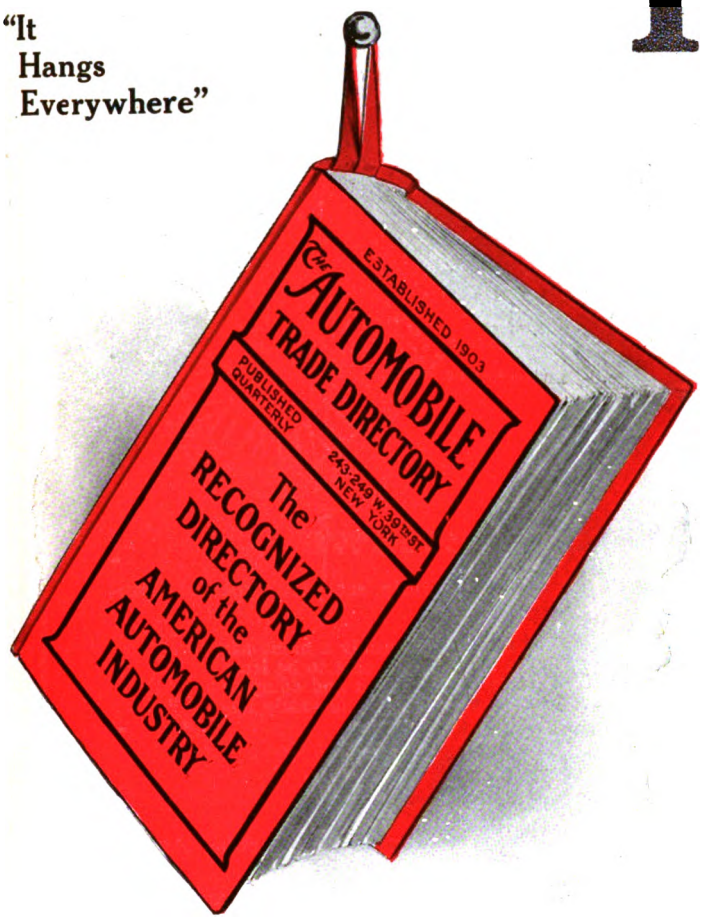
SAN FRANCISCO
444 Market Street

DETROIT
1215 Woodward Avenue

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Is Business Tight?

"It Hangs Everywhere"



This is the Economical Advertising Medium for Tight Business

ECONOMY in buying is the watchword today.

¶ Economy in selling is of equal importance.

¶ Buyers of everything---everything that is used in the manufacture and maintenance of cars and trucks—have learned to depend upon this truly authoritative guide. It is the compendium of the industry.

¶ It reaches the man you want to reach---at the exact time you want to reach him.

¶ It is the act of business prudence to be guided by THE AUTOMOBILE TRADE DIRECTORY in making purchases.

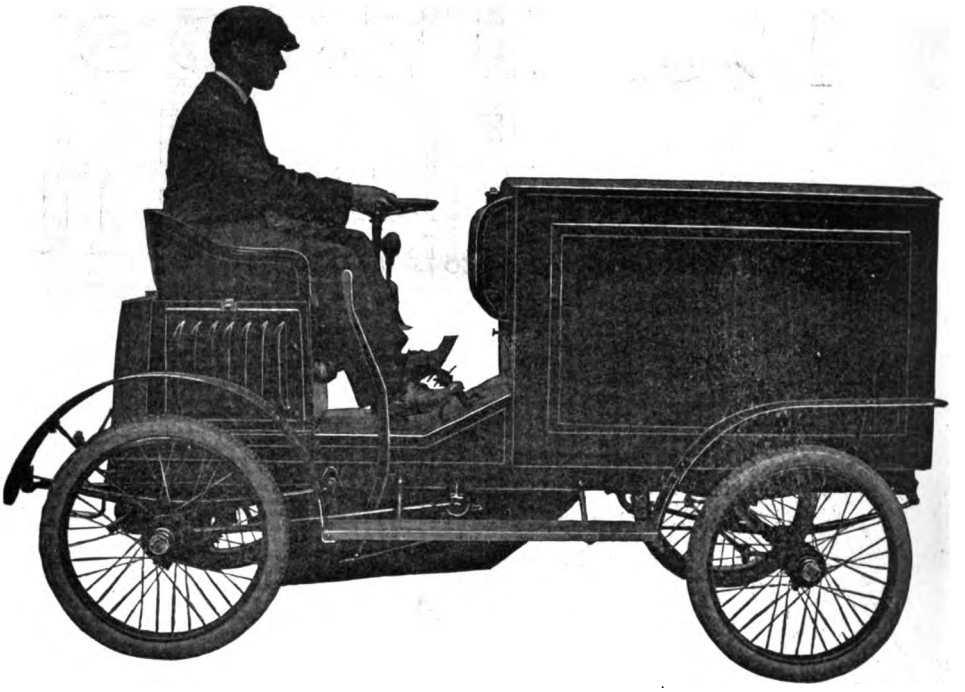
¶ It is the act of business prudence to advertise in THE AUTOMOBILE TRADE DIRECTORY.

THE AUTOMOBILE TRADE DIRECTORY will get you more business for less cost than any other medium in the automobile industry.

THE AUTOMOBILE TRADE DIRECTORY

243-249 West 39th Street **NEW YORK**

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The Review of Reviews

In its November issue states, after referring to the many generally accepted types of Commercial Motor Vehicles:

> **"In addition to these, there is urgent need for a vehicle, possibly a mono-car with a package box, capable of carrying from 300 to 500 lbs., the cost to be from $350.00 to $400.00. This vehicle will displace a single horse wagon and compete with it fairly from a standpoint of initial cost, beat it for upkeep and vastly improve the service."**

THE MOTOKART

is the first and still only vehicle built in America fulfilling the above requirements. Among its many practical selling features are:

WATER-COOLED FOUR-CYCLE MOTOR, no pre-ignition choking or similar troubles.

FRICTION DRIVE, no gears to strip.
COMPACT DIMENSIONS, facilitating handling in crowded streets.
RIGID CONSTRUCTION, insuring structural safety under the most severe usage.
LARGE BOX AREA, greater than upon any other similar car.
SEMI-ELLIPTIC SPRINGS, assuring ease of carriage upon the roughest roads.
WIRE WHEELS, equipped with 26 x 2½ Non-Skid Tires.
PRICE, within the reach of every retailer in the United States.

$400.00

County agents wanted in all unoccupied territory

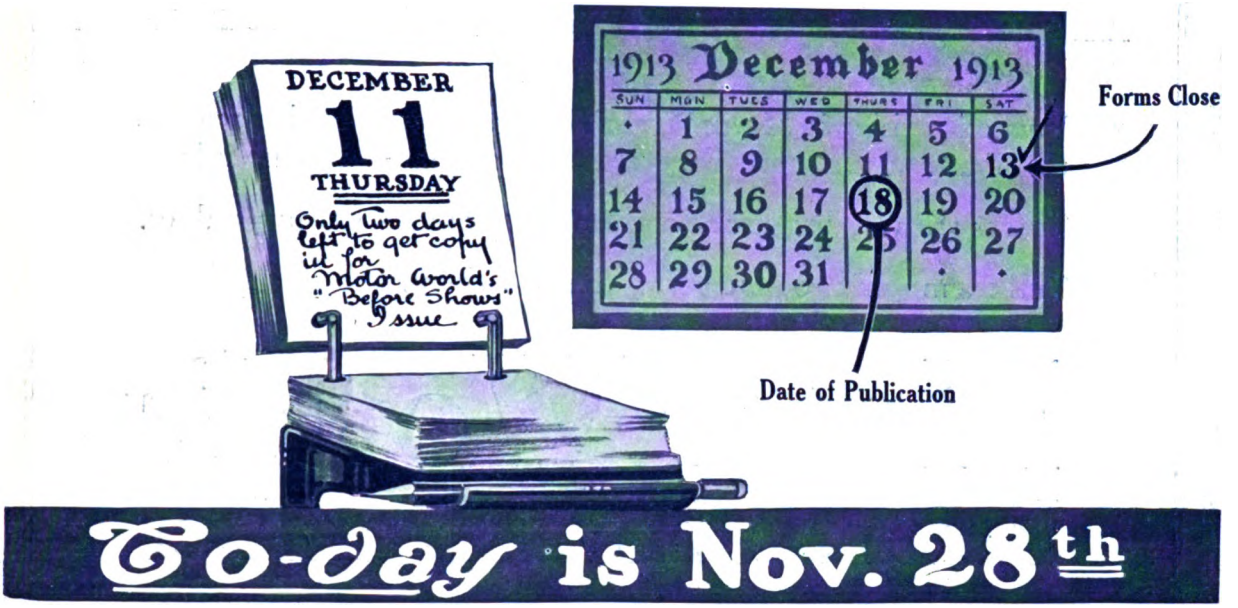
TARRYTOWN MOTOR CAR CO., Inc.

Factory: Tarrytown, N. Y. **Office: 1790 Broadway, N. Y. City**

Address all correspondence to New York Office

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That Publication Serves the Manufacturer Best which Helps the Dealer Most



To-day is Nov. 28th

You have just 22 days in which to get in

Motor World's Before Shows Number

Don't wait until a day or two before our forms close. Get your copy in to us as soon as you can. The value of advertising in a Before Shows Issue is so great comparatively that little more need be said—except perhaps to urge the importance of sending your copy for this issue to us as early as possible; today if you can.

THE MOTOR WORLD PUBLISHING COMPANY
1600 Broadway, New York City

W. H. TRIPP
Western Advertising Manager
1001 Ford Building, Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York City

That Publication Serves the Manufacturer Best which Helps the Dealer Most

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That Publication Serves the Manufacturer Best which Helps the Dealer Most

Your advertising in Motor World's Before Shows Number reaches the Trade at the time they are making their buying plans.

This is the very best time for them to learn about your product.

Tell them what you are going to show them.

Motor World's Before Shows Number

Published December Eighteenth

is the best vehicle to convey the particulars about your goods to the Trade, to stimulate their interest in your particular product and to help them *sort out* from the *general mass* those things that *they do not want to overlook*, in spite of the countless diversions of Show Week.

Your advertising tells them you have a business proposition to offer and it will insure their interest beforehand. *Show Issues are too late.*

Exhibitor or non-exhibitor, the value of an announcement in Motor World's Before Shows Number is too great—too well timed to be missed.

Please don't delay your decision until the last day.

THE MOTOR WORLD PUBLISHING COMPANY

1600 Broadway, New York City

W. H. TRIPP
Western Advertising Manager
1001 Ford Building, Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York City

That Publication Serves the Manufacturer Best which Helps the Dealer Most

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$2400
Completely equipped

$2400
Nothing extra to buy



More Power
More Flexibility

More Economy
More Silence

It's here—a Moline-Knight—$2400

For the man who THINKS before he SPENDS

The old poppet valve has outlived its usefulness

The poppet valve served its purpose well in its day—it was the best available motor when it was designed years ago, but it has its limitations as any competent engineer or mechanical expert will admit.

But the things of yesterday will not satisfy you today. The sun dial gave correct time—but you wouldn't trade it for the watch you are carrying.

Once you were contented to ride miles in the old horse-drawn street car—but today even the swift moving electric driven street car seems slow.

The manufacturers of motors have known for a long time that the days of the poppet valve were numbered—they have spent fortunes and years of labor in an effort to get rid of the poppet valve. The Knight motor solves the problem.

Only a small number of motor car builders can obtain a license to build a Knight motor—yet there are thousands of Knight engines in actual use today giving more power, more flexibility, more economy, more silence than the old poppet valve motor.

Europe took the lead in discarding the poppet valve—and the result is such celebrated cars as the Mercedes, the Daimler, the Panhard and the Minerva. A few American builders then began to manufacture Knight motors—until today the Knight motor now holds ***undisputed established supremacy.***

Backed by 23 years of successful manufacturing

Charles Y. Knight—the inventor and designer of the Knight sleeve type of motor granted a license to the Moline Automobile Company because along with their nine years successful experience as motor car producers they had fourteen years experience as builders of gasoline engines.

Practically the same officials who constitute The Root & Van Dervoort Engineering Co., makers of the world famed R & V Engines, comprise those who direct the affairs of the Moline Automobile Company. The present output of R & V engines is over 20,000 per year.

Mr. Knight satisfied himself ***in advance*** that his master blue prints would be religiously adhered to and that the finished Moline-Knight car would be in keeping with his desires and a credit to his organization. He went a step farther — he brought from Europe his most competent engineers and designers and placed them at the disposal of the Moline Automobile Company.

No other organization in the entire motor car industry is better equipped with brains, experience, skilled workmen, modern machinery, plant or financial responsibility to build the ***supreme*** Knight than the Moline Automobile Company.

Every dealer and motor car owner candidly admits that the Knight design is more ***silent*** than any other type of motor, but the story of its unusual power, its proven economy, its extreme flexibility, has never been half told.

MOLINE KNIGHT

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A Moline-Knight means

instantaneous getaway—every drop of gasoline consumed—no carbon—no valves to clog or grind—less consumption of fuel per horse power—more power per piston displacement—simpler parts, fewer parts, less to get out of order—economy

Why the motor of the future will not have poppet valves

High compression, large valves, strong springs and precipitous cams are necessary in the poppet valve engine in order to get great power and high speed.

These large valves and their seats will often warp. They do not cool properly because of their large area and the excess heat caused by high compression. The strong springs necessary to seat them at high speeds soon weaken, or actually pound the head of the valve out of shape. That's why racing motors are often built with two exhaust valves to the cylinder—so they can be kept small and cool.

Strongest where the poppet valve is the weakest

In order to be anywhere near efficient, the poppet valve motor must have low compression, small valves, weak springs and a gradual opening cam.

Here is a weakness the poppet valve will never be able to overcome. Small valves and weak springs mean ***decreased*** efficiency in both power and fuel consumption. The small valves do not admit sufficient gas to generate high pressures behind the piston—the weak springs will not properly seat the valves at high speeds, thus causing them to lag and foul the mixture by permitting the piston to draw back into the cylinder exhaust gases through the exhaust ports when the springs fail to close this port at the proper time. The powerful poppet valve motor requires a cam capable of opening the valves suddenly and wide—and the very nature of this operation prohibits quietness, because the opening must be more or less in the nature of a hammer blow. You can see that quietness and power are impossible with the poppet valve motor.

Why the Moline-Knight is supreme

The superiority of the Moline-Knight engine over any poppet valve lies in the fact that the efficiency and durability of the sleeve valve system is not affected by high pressures. The explosion does not affect or shock it at any point because the sleeve valve is balanced against lateral pressure.

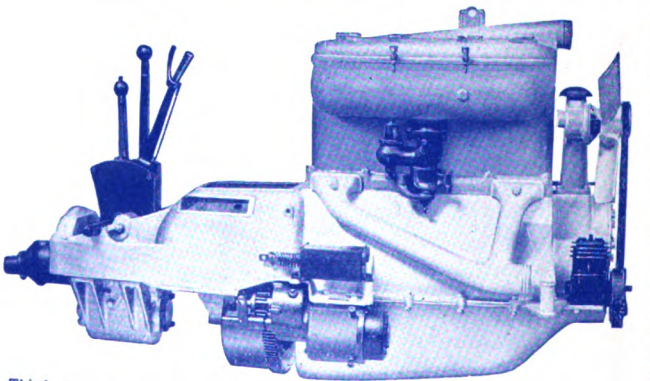
The ports are large, the inlet and outlet most effective for their area and the action of the motor is not affected adversely by their increased size.

In the sleeve valve motor is combined silence, endurance and reliability of the small poppet valves and low compression with the high efficiency of the high compression, large valves, powerful springs and precipitous cams of the racing poppet valve motor, consequently, the operator has in the one sleeve valve ***all the advantages*** of both types.

A standard sleeve valve motor is capable, as far as efficiency is concerned, of delivering all the power of the racer, with all the softness and quietness of the old style poppet valve motor.

In addition, the operator has within his easy control a surplus of power which he can call into instantaneous service when needed in emergencies. While ordinarily one cannot expect extreme speeds over country roads, yet in the Moline-Knight the power is there when required for acceleration and hill-climbing.

You have been given here a simple statement of the *facts*—now we are ready to prove to you by actual demonstration that the Moline-Knight has the most powerful, durable, flexible, economical and silent motor ever built—that it will give more satisfaction to the owner than the best poppet valve type of motor ever built.



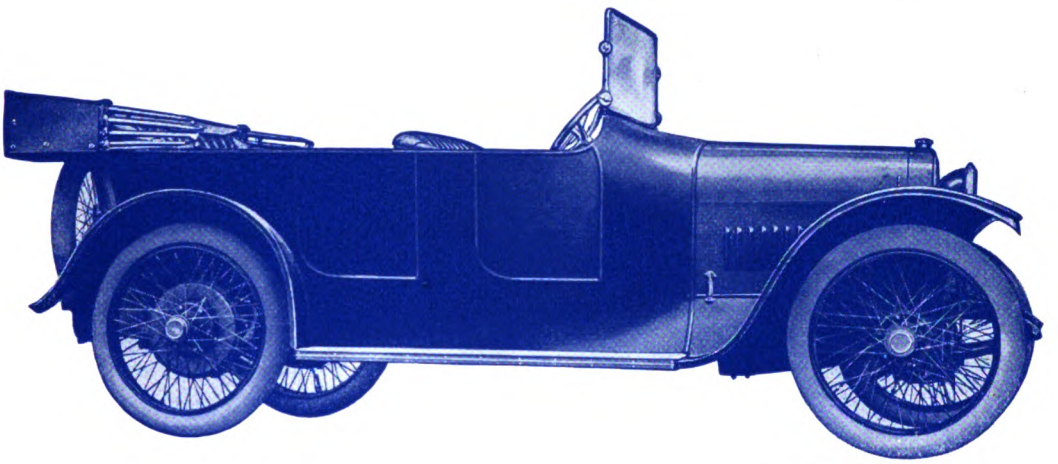
This is the carburetor side of the new Moline-Knight motor. Note the tire pump in front, also the third control lever which operates the electric starter.

MOLINE KNIGHT

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Moline-Knight

A big, roomy five-passenger car with an electric starter that starts each and every time—perfect streamline body



Four cylinder, five-passenger, guaranteed 50 H. P., 128-inch wheelbase, 36x4½-inch Tires, Bosch ignition, Moline-Wagner electric starting and lighting, $2400

The "Four" that makes the "Six" unnecessary

Perfect streamline body

In appearance the Moline-Knight is similar to the highest priced foreign cars—yet it has a distinctiveness and individuality. It is the only genuine streamline body built in America—note the absence of abrupt breaks in lines. This streamline is perfect, graceful and smooth, offering the least resistance to air pressure.

We believe that the body is larger than any other five-passenger car built today—it has ample room for the two auxiliary seats for which it is ironed—it will answer all the requirements of the man who wants either a five or a seven-passenger car.

As powerful and flexible as any "Six"

The Moline-Knight motor is a powerful 50 H. P. engine, having four cylinders—and we stand ready to demonstrate that it is as flexible as any six-cylinder poppet valve engine ever constructed—it has developed far more power and flexibility than any other motor of the same piston displacement that we have ever known.

All the durability-contest winning features retained

In the previous models of the Moline cars we demonstrated that we knew how to build a powerful, convenient and dependable car—these cars won durability contests from coast to coast—but in the Moline-Knight we have surpassed all previous efforts. From stem to stern the Moline-Knight is a thoroughbred.

All through the chassis are those parts that by their record have been demonstrated to be the very best—and you will also find them on cars selling from $1000 to $2500 more than the Moline-Knight.

Accepted under the Van Dervoort test

Every part selected to go into the Moline-Knight was subjected to the Van Dervoort test, based on President W. H. Van Dervoort's years of experience as a gasoline engine and motor car builder.

MOLINE KNIGHT

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Scrutinize the Moline-Knight before you decide

What you get In the Moline-Knight, the motor, cone clutch in fly wheel and selective transmission are housed as a unit power plant which is carried on three point suspension.

All operating and mechanical parts are quickly accessible—simply raise the hood, remove the floor boards and you have everything back to the universal joint in plain view.

The frame is hydraulic pressed steel, tubular radiator, drop forged I beam front axle, full floating rear axle, 128 inch wheelbase, selective transmission, half elliptic rear springs of unusual length, Truffault-Hartford shock absorbers, Bosch ignition system, Schebler carburetor, Moline-Wagner electric starting and lighting, spark and throttle on steering wheel with foot accelerator, adjustable foot pedals, Gemmer steering gear, center control, left side drive, two accessible front doors, drive shaft encased in oil, lubrication by force feed through hollow shaft, 36x4½ artillery or wire wheels, Firestone demountable rims, 18 gallon gasoline pressure tank in rear, finished in blue-black, other colors optional with three weeks notice.

Regular equipment Mohair top, top cover and side curtains, automatic rain vision wind shield, electric starting and lighting system, electric horn, power tire pump, Warner 60-mile speedometer, 36x4½ Goodrich Unit Molded Tires, gasoline and oil gauge on dash, dash light illuminating gauge and speedometer, foot rail, robe rail, tire irons, complete set of tools, jack, tire repair kit, eight-day clock.

Dealers—send this for "Advance Information Folder"

Moline Automobile Co.,
100 Maple Ave., East Moline, Ill. (*Confidential*)

I am representing the_____
Automobile here and sell about_____cars a year. Without obligation on my part, send me by return mail, "Advance Information Folder" on the Moline-Knight—I'm interested.

Name _____

Firm_____

Address_____

Dimmer headlights The Moline-Knight is equipped with dimmer headlights. By pressing an electric button the big light goes off and the small light comes on. There are no side lights, the use of which would break the perfect streamline of the body.

Price $2400 Five-passenger with artillery wheels, $2400; five wire wheels $75 extra, and two auxiliary seats for seven passengers, $60 extra.

All prices F. O. B. East Moline, Ill.

Large demand in advance *To the dealer,* the Moline-Knight means dollars and prosperity—because he can now sell his trade the car it has long wanted.

To the user, it means a Knight motor for *less money*—and the four things he has always wanted—more power, more flexibility, more economy, more silence.

The demand for the Moline-Knight is going to exceed the supply. But we will not sacrifice quality for quantity—every car must pass our rigid inspection before it leaves our factory.

Our object is to place our cars in the hands of the *right* dealers and not to oversell.

We are prepared to make a limited number of contracts with dealers. Just as soon as this season's output is contracted for, we will write no more contracts, because we will deliver our cars *on time* to every dealer holding one of our contracts.

If you are a user and wish to know more about the Moline-Knight—write us at once for our "Advance Information Folder."

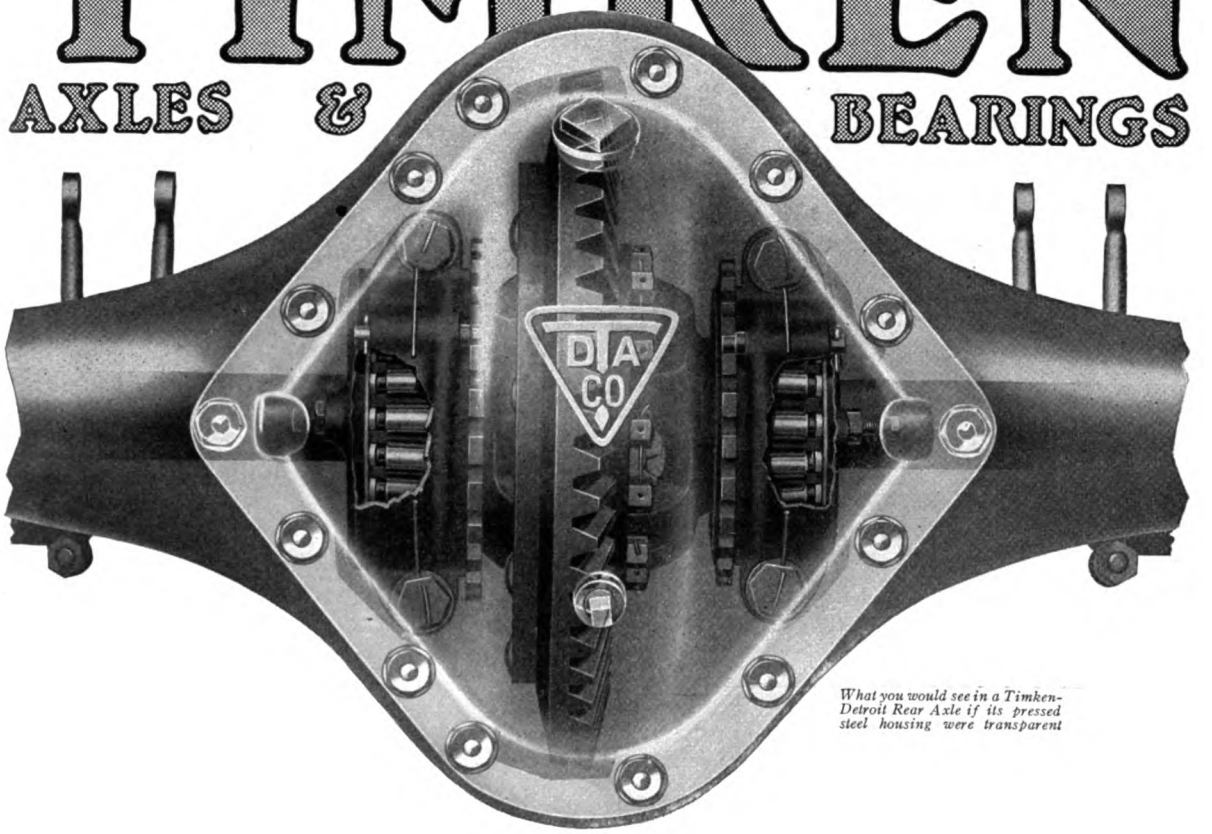
If you believe you are the right dealer and entitled from your experience and financial standing to a contract for the Moline-Knight, act at once—wire, use the phone or coupon, or visit us at our factories. Get our "Advance Information Folder" immediately.

Moline Automobile Co.
100 Maple Avenue, East Moline, Ill.

MOLINE KNIGHT

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TIMKEN
AXLES & BEARINGS



What you would see in a Timken-Detroit Rear Axle if its pressed steel housing were transparent

Look Into Your Rear Axle

X-Ray pictures of the human body reveal what the eye cannot see. They gently penetrate skin and muscles and show the wonderful structure of vital organs and bones. Could the X-Ray penetrate the pressed-steel housing (the skin) of a Timken-Detroit Rear Axle it would reveal what is shown in the picture above.

Hidden under the housing are the shining teeth of polished gears that transmit driving power from engine to wheels. Quiet running, full power, satisfaction, depend on the accurate meshing of those polished teeth.

EVERY curve and angle of the teeth has been calculated by expert engineers and has been made an accurate reality by the unique Timken process of grinding every gear to its master pinion, every pinion to its master gear.

But even that accuracy would not avail, except for the labor of many hands and brains, through which it becomes possible to *put the gears together right* and *keep them right* after they are in the axle.

This means conscientious labor in the tool-room, where jigs and gauges are made.

It means exactness in size and alignment of holes, of threads, of adjusting rings. It means firmness of clamping devices that hold the parts almost as solidly together as though they were welded.

It means many men, many operations, constant gauging to the finest limits of accuracy, exhaustive testing.

It means using bearings that show almost *no* wear after thousands of miles of running—yet can be adjusted to correct that small wear perfectly—bearings that meet side pressure as well as direct weight. The one bearing that *does all* these things is the Timken Tapered Roller Bearing—and no other has been used in the Timken-Detroit Axle.

It means, in short, a design built upon long experience with all types of motor cars, under all possible conditions of service, in all parts of the world.

Look Deeper Still

Go deep down below the finished whole, below the operations and materials, even below the design—get down to the very heart and core of Timken Axle Quality.

There you find an organization of men, wholly devoted to one ideal—the building of a perfect axle. Absolute perfection is their goal, and no lesser goal will serve these men. From the day of the first motor-car they have worked together toward that end.

And to this ideal is due the safety, comfort and satisfaction of the man who drives a Timken-equipped car today.

You can catch the X-Ray spirit and look into the hidden, important facts by writing today for the Timken Primers, T-7 "On the Anatomy of Automobile Axles" and T-8 "On the Care and Character of Bearings." Sent free post-paid from either address below.

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.
THE TIMKEN ROLLER BEARING CO., CANTON, O.

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THE ATTERBURY LINE

Selected by the War Department Purely On Merit

The final test made under supervision of the inspector for the War Department—pronounced PERFECT.

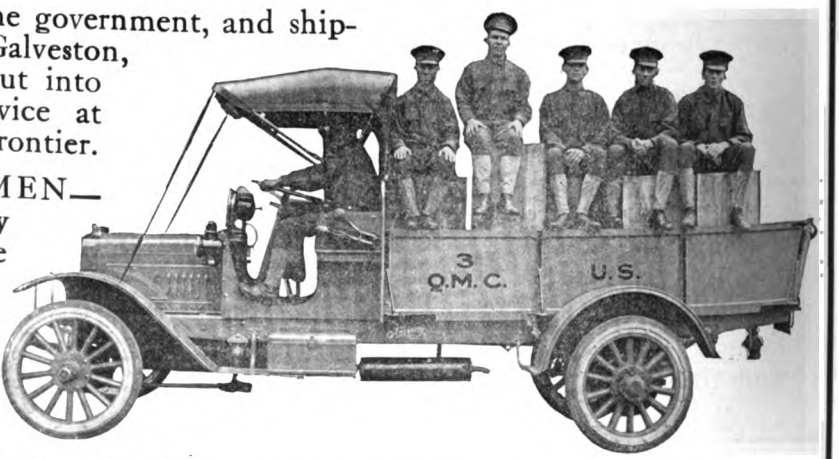
IT DEMONSTRATED

Quickness of Action
Ease in Handling
Freedom from Heating
Quietness in Operation
Power for Steepest Grades
Economy in Fuel Consumption

Distance Traveled 103 Miles, Time, 7 1-2 Hours

Accepted for the government, and shipped at once to Galveston, Texas, to be put into immediate service at the Mexican frontier.

BUSINESS MEN—The Atterbury Truck will prove a great asset in bringing to *you bigger business.*



To the dealer who looks ahead—to the dealer who sees that one satisfactory sale made NOW means more sales in the future—to such a dealer we offer a splendid agency proposition.

ATTERBURY MOTOR CAR COMPANY

Black Rock, Dept. "M.W.," Buffalo, N. Y.

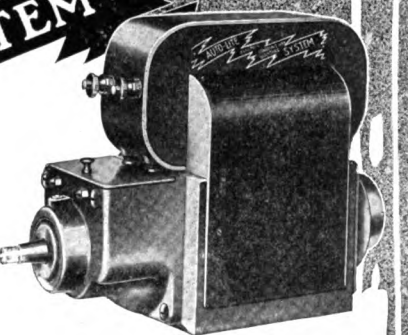
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EVERY MOTORIST should have this BOOK & CHART.



AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM





Write for Your Copy Today

and inform yourself regarding the care and operation of the modern Electric Starting, Lighting and Ignition Systems.

The information given in this handbook and on the operation chart which accompanies it will give you practical aid in the proper operation of all automobile electric systems.

Explains in detail functions of the various parts, how to locate and remedy troubles of all kinds. It is the best written book on the subject so far produced.

The large operation chart which it contains is alone worth the price.

Regular price 50 cents.

Will be sent to you for 10 cents in stamps if you use this coupon.

"As Sure as the Whirl of the World."

This Book Covers the Following Subjects

Electric Starting and Lighting Systems
The Generator
The Storage Battery
The Motor
The Controls
The Wiring
The Circuit Breaker
The Governor
The Ammeter
The Switches

The Electric Auto-Lite Co.

The Pioneer Makers of the 6-Volt Electric System

TOLEDO, OHIO

BRANCHES:
New York, Detroit, Kansas City, San Francisco

THIS COUPON SAVES YOU 40 CENTS

ELECTRIC AUTO-LITE CO.,
116 Michigan St., Toledo, O.

Enclosed find 10c. in stamps for which please send me your handbook.

Name .....

Address .....

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Jeffery

The Jeffery Four—$1550

America's First High-Grade Moderate-Priced Car

Powerful and Light

Not alone in the introduction of a high speed mono-bloc motor is the Jeffery Four a year or two in advance of other American cars. Our engineers brought from abroad minute data on preferred tested foreign materials. As a result we make our springs, rear axle, drive shafts and front axle from vanadium steel. The best American bearings didn't satisfy our ideal; we adopted the best imported annular ball bearings. Rothschild designed the body; we bought an $18,000 giant press to carry out his ideas in its manufacture.

In fact, Jeffery specifications read like the dream of those who are motor-wise and who've been wanting just such an ideal moderate priced car.

Here they are; you've never seen such high grade quality at this price.

Full floating type rear axle on imported annular ball bearings—high grade. Same quality as used by high priced cars generally.

Body designed by Rothschild of New York—high grade. The hit of the Paris show.

Leather universal between clutch and transmission—high grade.

Vanadium steel springs and front axle—high grade.

Rayfield carburetor—high grade.

Left drive and center control.

Pressure feed gasoline tank in rear and pump operated through cam shaft—high grade.

Bosch Duplex ignition—high grade.

Solar lamps with dimmer—high grade. Operated by four-position switch—the simplest ever made.

Wheelbase 116 inches—Turning radius 42 feet. Demountable rims with 34x4 tires.

High speed, L head mono-bloc motor, European type. Designed and built in Jeffery plant. Size 3¼"x5¼".

Horsepower 22½ which develops to 40 H. P. at 2000 revolutions per minute. From nothing to forty miles in twenty seconds—high grade.

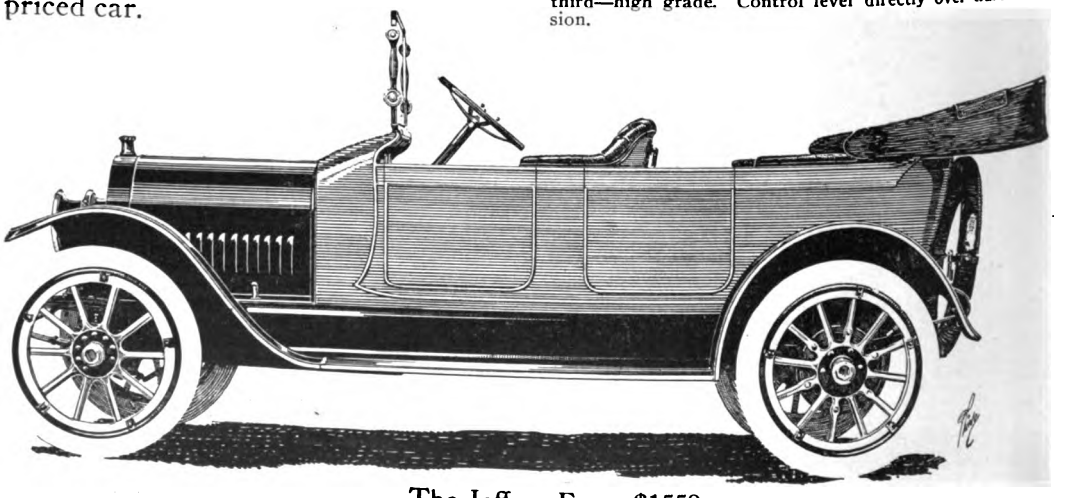
U. S. L. starting and lighting system—high grade and simple.

Imported annular ball bearings throughout—high grade. Standard on the world's best cars.

Spicer universal joints—high grade. Ask any mechanic.

Combination force feed and splash oiling system—high grade. The most economical we know.

Four forward speed transmission with direct drive on third—high grade. Control lever directly over transmission.



The Jeffery Four, $1550

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Big Motors Don't Mean Big Power

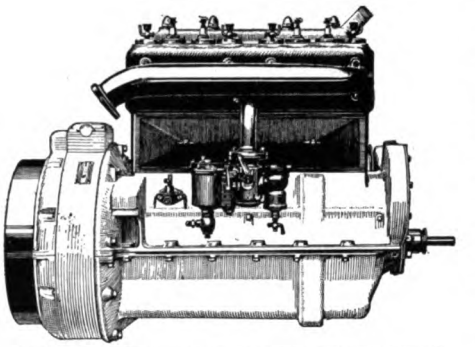
The average man thinks a motor must be a great big heavy motor, or it hasn't the power, won't drive its car as fast as he wants—up hills, through heavy roads. He's been fooled into considering bore and stroke without considering the weight to be carried. He's been sold cars too heavy for his needs; paid the price in gasoline, tires and upkeep.

In the Jeffery Four, with its high speed mono-bloc motor, we've accomplished what other builders have overlooked or failed to produce. This is it:

A light, high grade car without the sacrifice of quality, strength, sturdiness, power, and above all, comfort.

American and foreign engineers have discovered the fallacy of excessive car weight and consequent cumbersome power plant. Most of the cars at this year's Paris Show carried motors of actually less bore and stroke than the Jeffery Four.

Dealers who are to be successful must tie up with a financially strong and successful organization. Furthermore, such a high grade car, built in such a plant and of such materials has never before been offered anywhere near this price. Big dealers in big cities all over the country are dropping other lines and organizing new companies to take on the Jeffery line. They are quick to recognize in this car a wonderful opportunity.



Note the compact, simple and light construction of the Jeffery high speed mono-bloc motor

Equipment of Jeffery Four

The equipment includes top of finest material, rain vision wind shield, Stewart-Warner speedometer, ammeter, extra demountable rim with brackets, electrically lighted dash, Klaxet horn, Solar electric lamps and complete tool equipment.

Prices of Jeffery Four

Built in five body styles. Five passenger touring, $1550. Two passenger roadster, $1550. Two passenger Coupelette, enclosed, inside drive, $1950. Four passenger Sedan, enclosed, inside drive, $2350. Five passenger limousine, $3000.

The Thomas B. Jeffery Company

Main Office and Works : : : Kenosha, Wisconsin

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Study the Packing Used in All

JEFFERY-DEWITT CO.
DETROIT, MICH.

Spark Plugs

¶ Outside the quality of materials used, the merit of any plug rests largely upon the method of supporting the porcelain and the method of packing to prevent leaking; for the bane of the ordinary plug is its leaky construction. In this particular, *J-D* spark plugs are faultless. Upon our radically different and superior method we lay as great stress as we do upon the high quality of our materials.

¶ Continued experiments and tests have shown that a permanently tight joint is impossible when the common method of packing with gaskets and asbestos is employed; for when the plug becomes heated there is an uneven expansion and contraction between the porcelain and the packing or support; while under heat the asbestos shrinks materially. After patient investigation, we have produced an alloy which has the same expansion and contraction as porcelain. This alloy is used in every *J-D* plug with the result that compression leakage is entirely eliminated.

¶ The mechanical construction of the *J-D* packing is as follows: The porcelains are formed with a shoulder in the shape of a double cone, ground to a true and perfect surface. A packing collar with a flanged end made of the special alloy mentioned above is forced on each one of the cones until the two flanges meet. This collar, which is fitted with a copper gasket, supports the porcelain in the shell and takes all the strain of tightening the bushing. This form of packing affords a ground joint and greatly increases the effective strength of the porcelain, both through the elimination of any unnecessary strain and through the reinforcement afforded by the extension of the packing collar above and below the points of support in the shell.

¶ The packing forms a component part of the porcelains, and facilitates their removal for examination, cleaning and replacing.

Jeffery-Dewitt Company

65 Butler Avenue, Detroit, Mich.

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The bearings in your car are a vital part. The dependability that you can place in the car depends upon the reliability of the bearing.

The reliability of Hyatt Roller Bearings is responsible for their almost universal adoption in every type and class of car built from the smallest runabout to the most luxurious six.

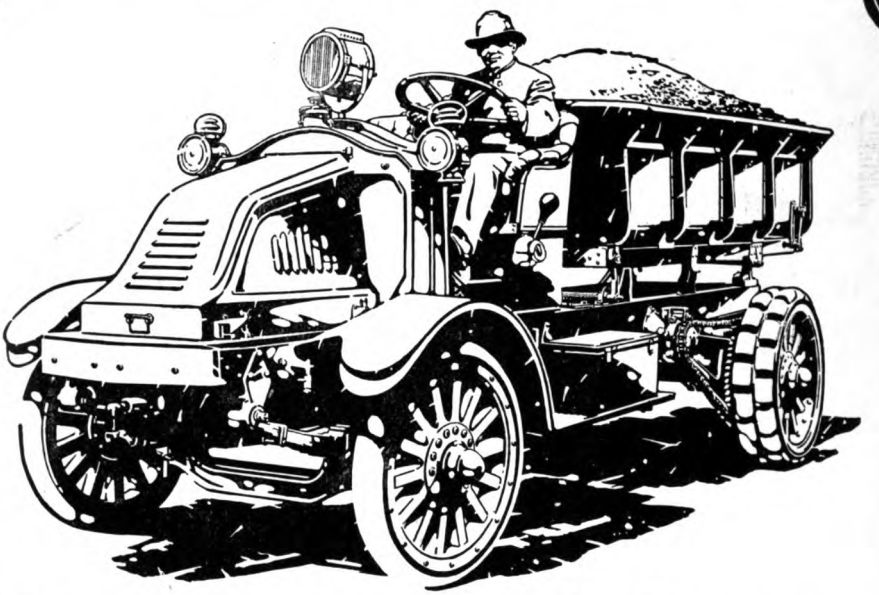
Today there are nearly 10,000,000 Hyatt Roller Bearings in daily service.

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request

"Hyatt Quiet Bearings"

HYATT ROLLER BEARING CO.
DETROIT CHICAGO
NEWARK, N.J.

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Sturdiness and Power

There's a sturdy truck—there's a Kelly! The Kelly is not a pleasure car—except that it brings pleasure to its owner in the saving of money and the betterment of service, but first and most important of all, it is a TRUCK unhampered by the traditions of pleasure car practice in engineering and in manufacture.

"The sturdy Kelly"—that best expresses it—willing, competent, trustworthy and always doing a little more and a little better than was expected of it.

Sturdy Kellys make bigger days and restful nights because they run on schedule.

Write for more information.

DEALERS!
There is still some desirable Kelly territory open. Write for our agency proposition.

The Kelly-Springfield Motor Truck Company
409 Burt Street, SPRINGFIELD, OHIO

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American Axles

Supply the Most Efficient Type of the Silent Worm Drive: The Lanchester-Daimler



The above statement is not offered as an argument; it is simply the consensus of leading automobile engineers on both sides of the Atlantic.

While America discussed the worm drive, England tested it. While Americans theorized as to whether its acknowledged advantages could be extended to electric and gasoline pleasure cars, foreign motorists were already enjoying its wonderful efficiency.

For more than two years we have regularly mounted the Lanchester-Daimler—the accepted leader among worm drives—in a full floating *American* Axle fitted throughout with the finest of foreign ball bearings.

We count ourselves fortunate in holding the sole American rights as axle manufacturers to the use of this drive.

Automobile manufacturers who have adopted our axles are equally fortunate; they offer in this worm drive a known quality, together with a mounting that represents the highest ideals of American manufacturing.

The adjusting and full-floating features of *American* Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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SAFETY FIRST

"Safety First" is the slogan of the great railways

You see it painted on every pillar and post and building along their lines.

And on the boulevard, the street, the country road—wherever you see the trail of the Goodrich Safety Tread you see another "Safety First" slogan.

Goodrich experience, Goodrich knowledge, Goodrich skill and Goodrich methods have put "Safety First" in every thread of fabric and every atom of rubber in

GOODRICH SAFETY TREAD TIRES

The anti-skid feature (the safety tread) is great in itself. The thick, tough rubber fingers clean and grip the roadway and hold your car to its course.

We have literally put brakes in the tire for you.

You get constant control of your car—starting, steering, turning, stopping, slowing up or speeding up.

You get lower-cost mileage all the time. The extra thickness of specially compounded, wear-resisting Goodrich rubber in the safety treads means longer wear, longer life and longer service in your tires.

Don't take a chance. Make "Safety First" *your* slogan—and *get it* in Goodrich Safety Tread Tires.

Best in the Long Run—Best in the Short Stop

The B. F. Goodrich Co.

Everything That's Best in Rubber

Factories: Akron, Ohio

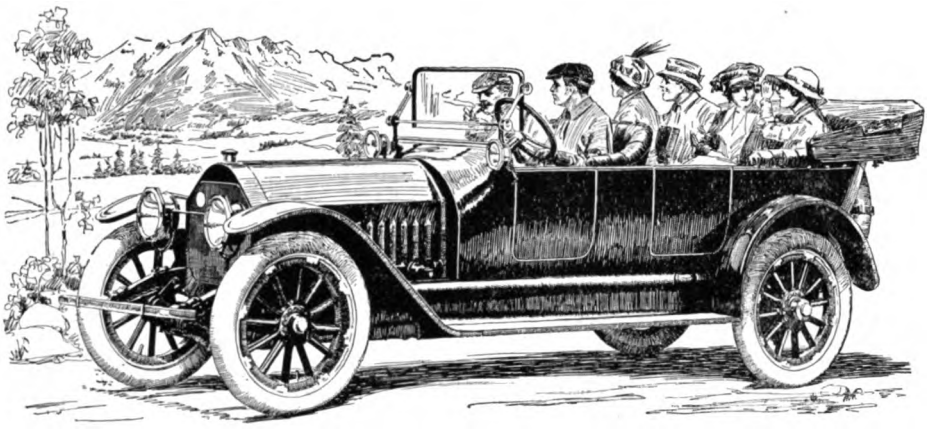
Branches in All Principal Cities

There is nothing in Goodrich Advertising that isn't in Goodrich Goods



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A "Six" of unsurpassed ability elegance and comfort



THE seven-passenger KisselKar 60 "Six" easily maintains its leadership as the conspicuous value among big "Sixes." In quality, appointments and performance it is unsurpassed. Only a few of the very highest priced cars can equal the extreme comfort of the big KisselKar 60 "Six." When you ride in it, you experience for the first time the fullest possibilities of balanced automobile construction and the capabilities of a real motor.

KISSELKAR 60 "Six"

A car of remarkably attractive personality. You can't look at this striking "Big Six" without being strongly impressed with its thoroughbred quality. Even when standing quiet at the curb, you feel its power and "sense" its potential ability as a car of the highest type.

The price of the KisselKar 60 "Six" is $3150, fully equipped. Golde patent "one-man" top, Warner Speedometer, Klaxon Horn and many other earmarks of de luxe cars are all found in the powerful, silent, smooth-running KisselKar 60 "Six."

The new KisselKar 48 "Six" at $2350 makes a worthy running mate to the "Big Six" and the 40 "Four" at $1850 is a distinct leader in its class.

All KisselKars are fully equipped—electric lighted and started, and have left hand drive, center control. Catalog on request.

KISSELKAR SERVICE CONTRACT

KisselKars are sold under a specific guarantee of service to owners—a written contract that stipulates in detail the mechanical care that forestalls trouble and retards depreciation. The unusual facilities at our Service Stations are always at your disposal.

KisselKar Trucks—six sizes, 1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Ask for Truck Catalog.

Kissel Motor Car Company, 159 Kissel Avenue, Hartford, Wis.

BOSTON, NEW YORK, CHICAGO, MILWAUKEE, KANSAS CITY, MINNEAPOLIS, ST. PAUL, DALLAS, SAN FRANCISCO, LOS ANGELES, OAKLAND, Philadelphia, Detroit, Houston, El Paso, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Cincinnati, Newark, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 300 other principal points throughout America.

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A constantly recurring squeak or rattle makes the car purchaser "sore" at the manufacturer of his car. As a rule such noises point unmistakably to inefficiencies of the bolted-up construction.

Look to your	Are these parts secured by Rivets, Light Lock Washers, or S. A. E. HEAVY?
Fenders	
Lamp Brackets	
Radiators	
Windshield	
Bodies	
Sod Pan	
Running Boards	
Crankcase Housing	
Rear Axle Housing	

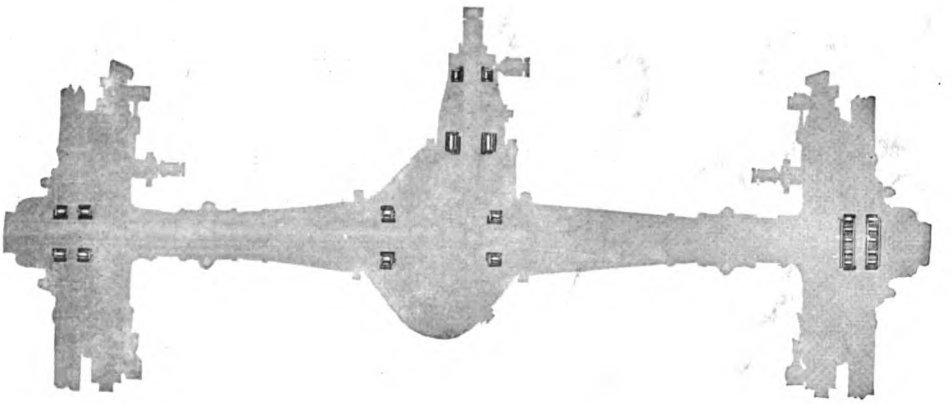
There's a reason—and the Hunt Test gives it. We will furnish full data on request.

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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"BOWER SAVES POWER"



Find the Eight Guarded Points!

In the typical rear axle and differential assembly there are eight points of danger, eight places where Friction lies in wait to take its toll of Power. But if Bower Roller Bearings guard these places, as in the above illustration, Power moves along its allotted path swiftly, quietly, smoothly.

No other bearing has the features of Bower Roller Bearings.

BOWER ROLLER BEARING COMPANY
DETROIT, MICHIGAN

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SPRINGFIELD CONVERTIBLE BODIES

With a Springfield Convertible Body, a few minutes work will turn the open touring car into a handsome luxurious closed car.

This radical departure from the unsightly, uncomfortable, ordinary top, is the final result of three years' development and it is today the ***only*** practical all-year-round body on the market.

When open, there are no signs calling attention to the fact that the body can be entirely enclosed in glass—just an ordinary closed top is visible.

When in position, the Springfield Convertible Body gives a beautiful glass enclosed, weather proof car with wide doors free from obstructions—in every way equal to the permanently closed car in appearance and comfort.

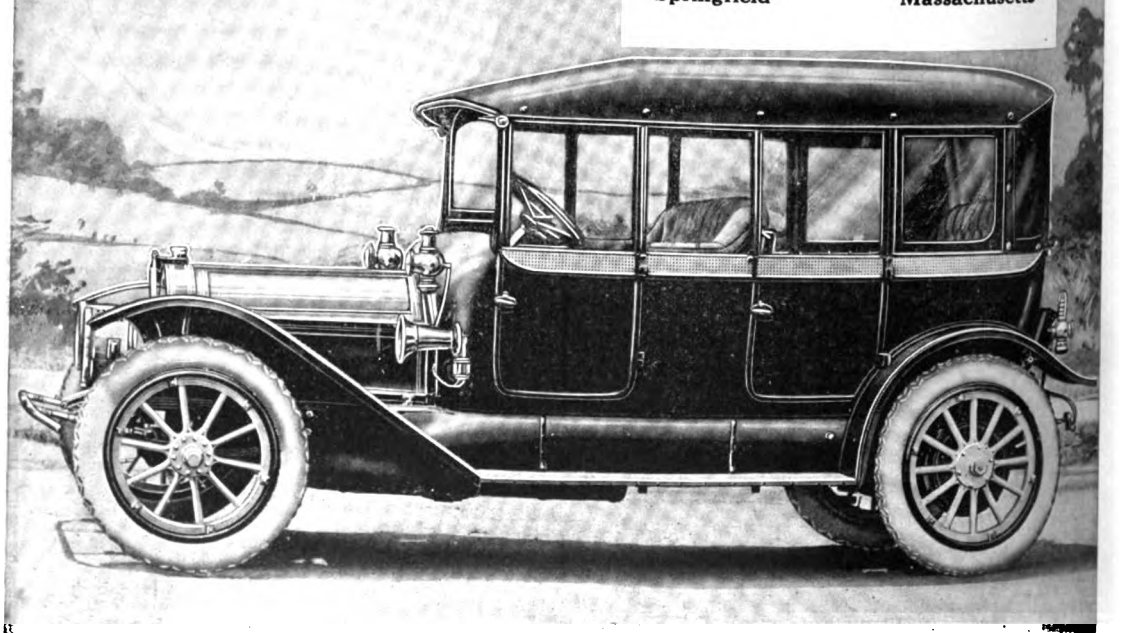
The transformation can be worked in remarkably short time through the simple operation of raising the top and adjusting the glass windows which are contained in a box back of the front seat when the car is open.

The Convertible Top feature is exclusive on Springfield Metal Bodies. It will not fit any other body, but we are prepared to make prompt deliveries on all designs from the little runabout to the largest limousine or landaulet.

Further information is at your command. Write for it.

Springfield Metal Body Co.

Springfield **Massachusetts**



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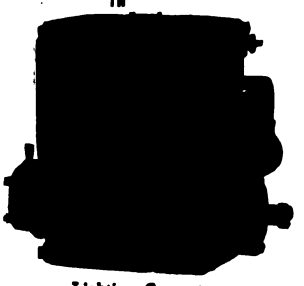
Self Regulating Without Adjustment

That's a feature every car owner appreciates in any device. It's what they get with the—

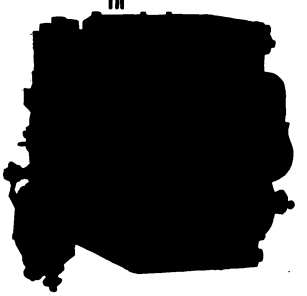
Westinghouse Electric

Starting, Lighting and Ignition System

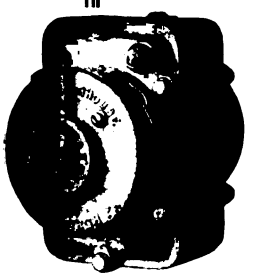
"The Systems Using a Single Wire"



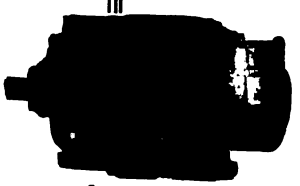
Lighting Generator



Combined Lighting and Ignition Generator



Starting Motor



Starting Motor

THE public recognizes that Westinghouse Electric Quality guarantees the equipment in design, in construction, in operation.

The Lighting Generators automatically charge the battery without the use of any relays or solenoid-operated regulators. There are no adjustments to be made. The battery is at no time charged at an excessive rate.

A high power, single unit Spark Coil, acting in conjunction with timing and distributing parts on the generator, furnishes high voltage for the spark. The battery operating alone, or with the generator, supplies continuous power. The interrupter gives **automatic spark advance.** The spark is uniform regardless of speed.

Minimum weight of motor, minimum discharge of the battery, are features of the starting motors, with maximum initial effort for positive starting. A Westinghouse starting motor means less weight to carry, and battery economy.

"Quality First—Service Always"

To Dealers and Repair Shops

Send us your name and we will mail you a complete set of instruction books on Westinghouse Electric Starting, Lighting and Ignition Systems, and place your name on our mailing list to receive new instruction books as issued.

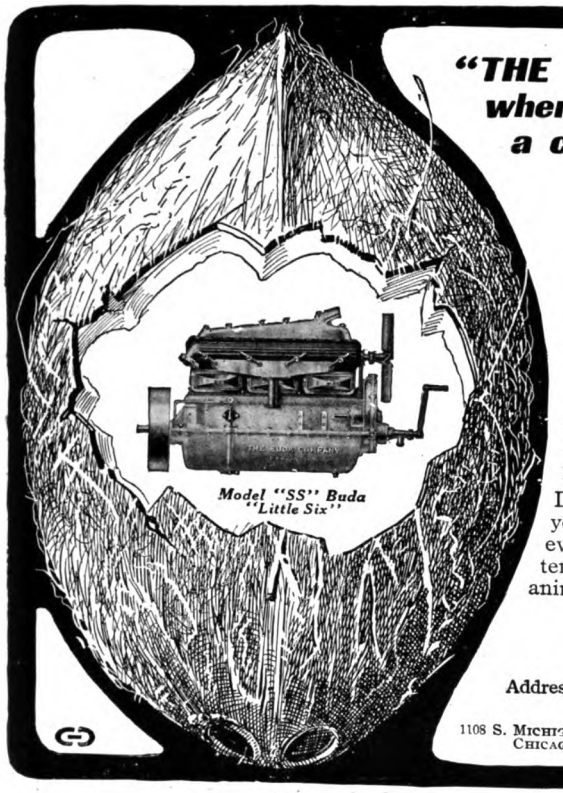
Westinghouse Electric & Manufacturing Co.

East Pittsburgh, Pa.

Member Society for Electrical Development.

"Do it Electrically."

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"THE MEAT IN THE COCOANUT," when you are paying good money for a car or truck, is the FACT that the

BUDA MOTOR

is "The Part That Sells the Car"

Do you realize that Automobile and Truck Manufacturers are *giving up their Motor Departments* in favor of the BUDA Motor, because they KNOW that a whole great *Organization* concentrating on *one thing*—THE MOTOR—can build *BETTER Motors* at a reasonable price than anybody's *Department* can build at any price?

Do a little exploring under the hood before you buy. If you find a BUDA Motor, you will know that no car you'll ever meet on the road (even a $5,000 one) will have a better motor than yours. (Because "there aint no such animile.") Write us.

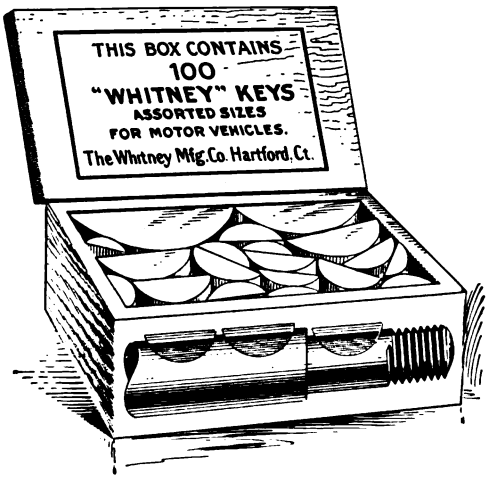
THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb)

Address all communications to our **FACTORY REPRESENTATIVES**

BRANDENBURG & COMPANY

1108 S. MICHIGAN AVE. CHICAGO — 57TH AND BROADWAY NEW YORK, N. Y. — FORD BUILDING DETROIT



"WHITNEY" KEYS

for

"The Woodruff System of Keying"

"Whitney" Keys are packed in boxes containing 100 assorted sizes, selected especially for the benefit of the repair trade.

Every garage and repair man should have a box of these assorted keys on hand. They cost little and are very convenient. They may be purchased from the leading jobbers of automobile supplies or we can supply same promptly from the factory.

THE WHITNEY MFG. CO.

Manufacturers of

High Grade Driving Chains. Keys and Cutters for the Woodruff System of Keying Hand-Feed Milling Machines

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BOSCH PLUGS



As Good As Bosch Magnetos

BOSCH Plugs like Bosch Magnetos are built on a quality basis, **NOT** on a price basis; the quality basis that has maintained Bosch Reputation at zenith in the gas engine industry. That is why Bosch Plugs are selected by those engineers and motorists who desire the utmost.

Bosch Plugs are made better and consequently serve better. Dealers find they sell without effort and add quality reputation to their establishments. Your orders are desired on the basis that you will be satisfied.

$1.00

is the selling price; the profit is there too.

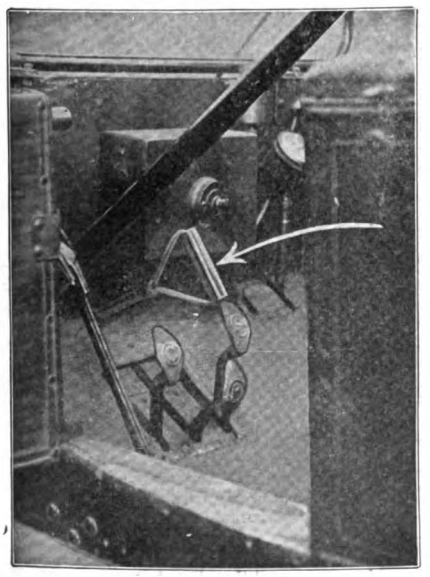
Write for "Locating the Spark Plug," an instructive book sent gratis.

Bosch Magneto Company

224 West 46th Street, New York

Chicago **Detroit** **San Francisco** **Toronto**

STOP!---SAVE MONEY



$9.00---ORDER TODAY---$9.00

Universal Manufacturing Co.

Racine, Wisconsin

$9.00--FORD ENGINE STARTER--$9.00

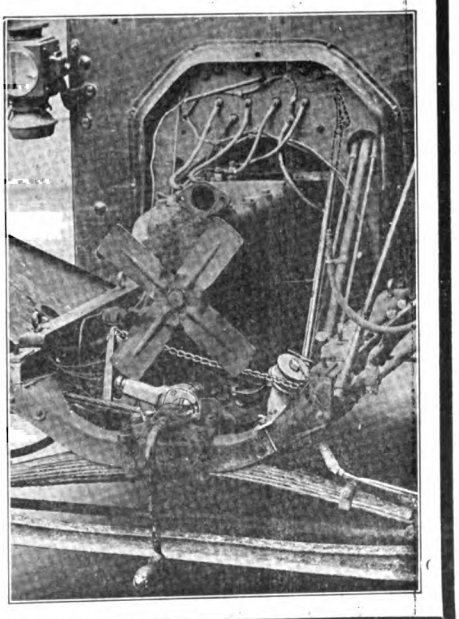
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



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Confidential to Automobile Manufacturers

Getting right down to "brass tacks" and talking man to man isn't it true that the CLUTCH is the one point of contact between the driver and your car?

That being so, isn't the continued good behavior of the CLUTCH a matter of prime importance? You want the CLUTCH right in the first place and you want it to stay right.

You are naturally anxious that the CLUTCH should say good things to those who drive your cars; what are you doing to make sure of it?

We respectfully suggest that the services of CLUTCH SPECIALISTS would be extremely worth while. KONIGSLOW-CLEVELAND will gladly have you make use of their experience and facilities.

Don't wait till you're ready to place orders—write today.

THE OTTO KONIGSLOW MFG. CO.
Cleveland

THE McKIBBIN COON SKIN



Satisfaction Guaranteed

McKIBBIN Coon Skin Coats

¶ The ideal cold weather garment for the motorist is a Fur Coat.

¶ Raccoon Skin of the highest grade and in its natural color is the present day ideal Fur for Men.

¶ **McKibbin Coon Skin Coats** are made from prime selected northern skins, ample in cut and unequalled in appearance or in their comfort giving qualities. Literally the best coon skin coat that money will buy, for **$160**

¶ If you motor through the winter without one of these coats you are subjecting yourself to an unnecessary hardship. Ask your dealer or send direct to the manufacturers.

McKibbin Driscoll & Dorsey
Saint Paul

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The Hollenden Hotel.

SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of
Cleveland Automobile Club.
Touring
Information

Do Your Own Welding!

Save Time and Money on Repair Jobs!

Every garage and every owner of taxicabs and motor trucks has an ***actual and frequent need*** for a good, simple welding outfit. Don't send out such repair work. You can now ***do it yourself***---and save a lot of time for your customers and money for yourself!

Don't buy and wait for new parts! You can ***make old parts as good as new*** by using the

Cox Welding Outfit

For Welding and Carbon Removing

Complete in every detail. Will do every possible welding job. Unlike others, it is ***very simple in construction.*** Any average mechanic can become adept in its use in a short time. We furnish complete instructions with each outfit. Can be used on parts of iron, steel, brass, bronze and aluminum. It is ***safe*** and ***sure.***

Every job you do means

Extra Profit for YOU

The outfit will pay for itself many times over. It means quick repair work—and ***all of it done in your shop!***

The Cox Outfit is not only excellent for welding, but it can also be used to

Quickly and Completely Remove Carbon from Cylinders

Thus you have a dual outfit—a profit maker in two ways! Its use is doubled. It saves time in two ways—and produces two profits! Its possession indicates progressiveness—up-to-date in shop equipment.

Send for free Catalog and full information—NOW.

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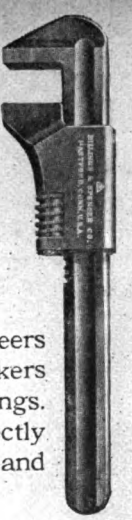
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NO Adjustments Battery Troubles **NO** Electrical Wiring Battery Expense

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A SLIGHT TOUCH OF THE LEVER—THAT'S ALL.

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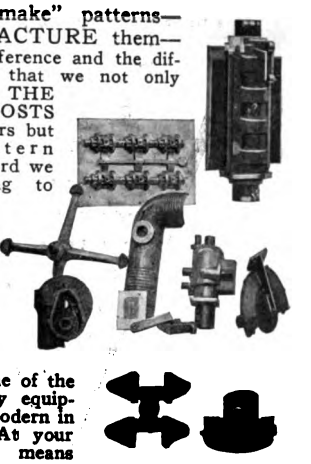
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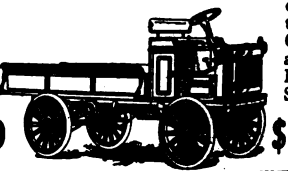
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We control the basic patents for this form of construction.

The porcelain used in this plug is not affected by sudden changes of temperature. It is made of special clays tempered by a process of our own.

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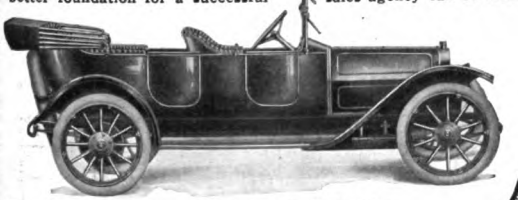
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OhiO 4-50 Price $1750

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4-50	5 Passenger	$1750
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¶ Ever try to sell a second-hand car that wasn't made any more?

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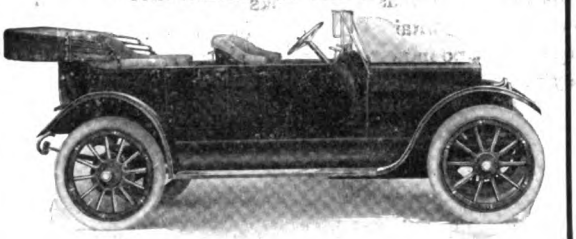
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¶ They can and will be raised against any car whose maker is now in financial difficulty or regarding which there is the slightest whisper of impending trouble.

¶ The Apperson Brothers have been making the

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"THE WIZARD OF THE HILLS"



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are a distinct asset to every Ford owner in that they insure against plug trouble. SPLITDORF PLUGS cost more than many makes of plugs on the market, but they are WORTH MORE and are really the cheapest in the long run.
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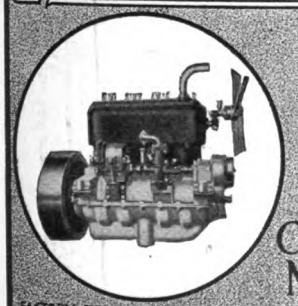
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4 AND 6 CYLINDER TYPES

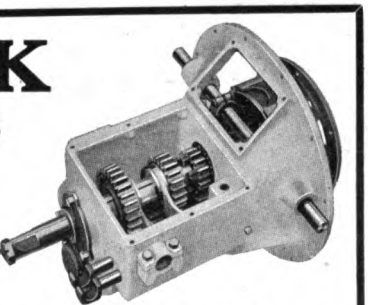
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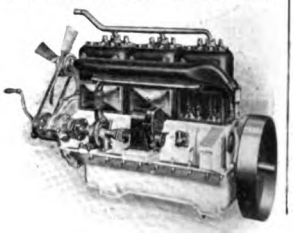
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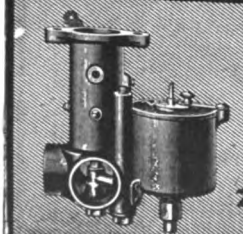


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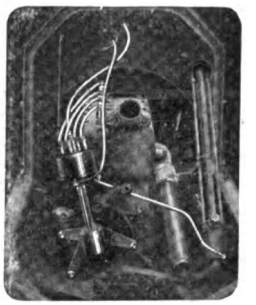
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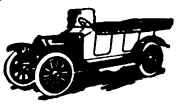
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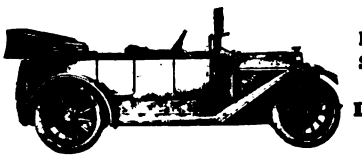
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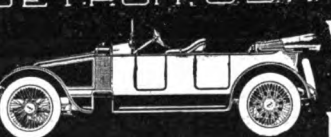
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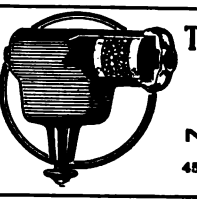
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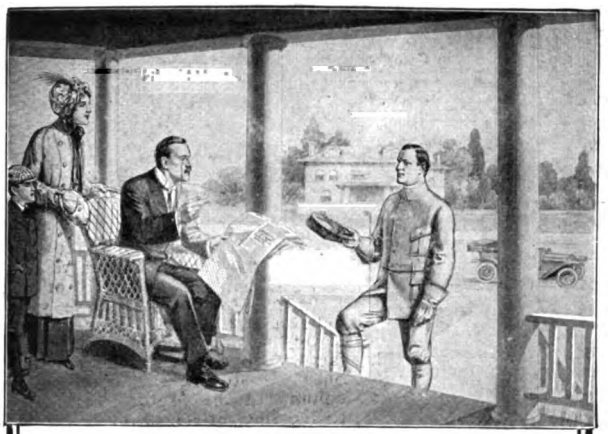
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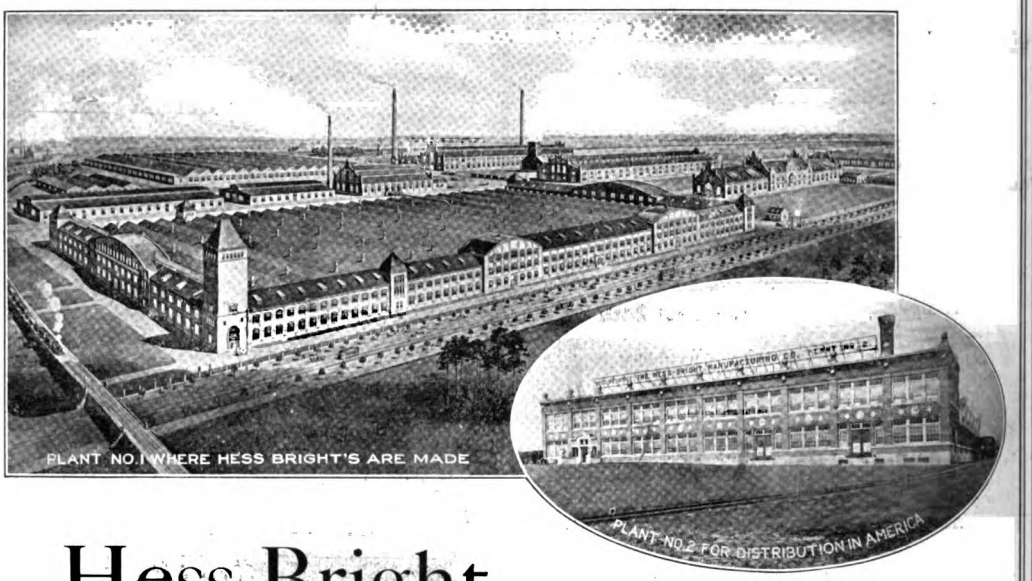
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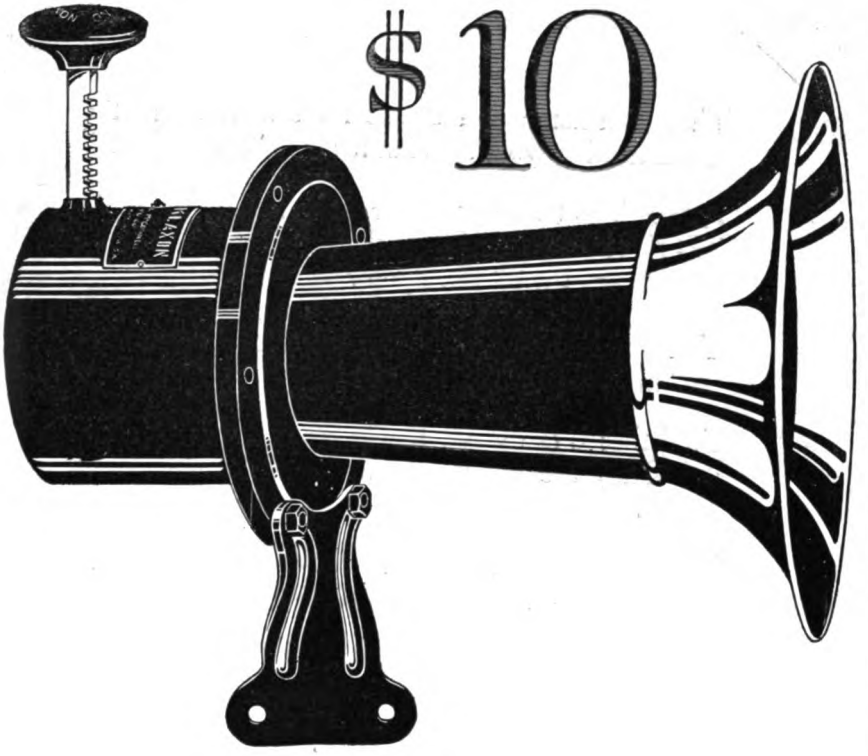
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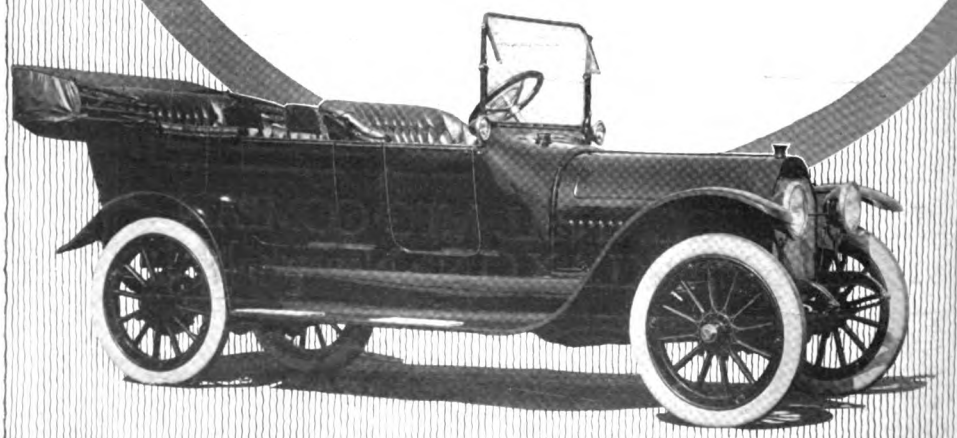
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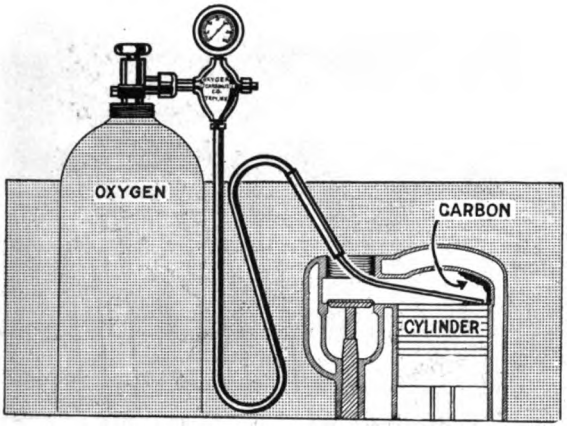
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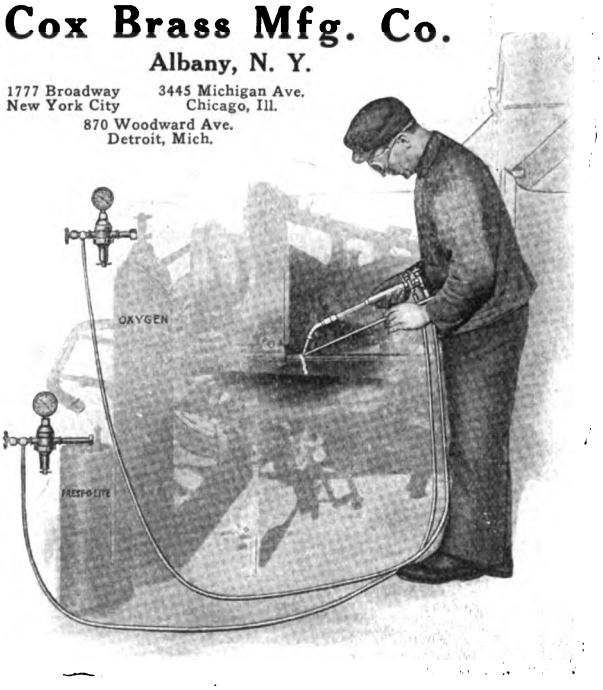
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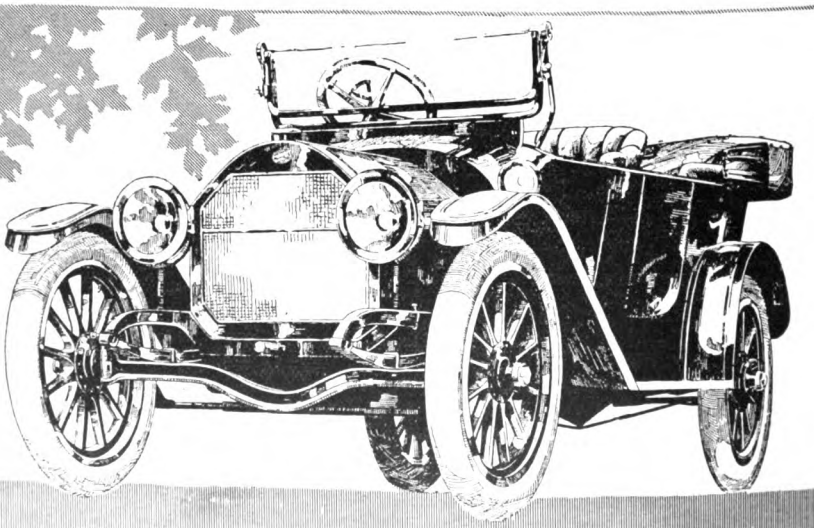
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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, December 4, 1913 No. 11

LONG HORN NOW A MEMBER OF JOHNS-MANVILLE FAMILY

Distribution of Piel Product Taken Over by Big Asbestos Products Company—Piel also Takes Corporation Form.

Gradually it is being made plain how far-reaching are the intentions of the H. W. Johns-Manville Co., of New York, in respect to automobile accessories, and what is the real meaning of the organization of an accessory department with Edward A. Cassidy at the head.

Having already taken over the sale of the outputs of Mezger Soot Proof spark plugs and Jones speedometers, the big New York corporation on Monday last, 1st inst., assumed control of the sale of Long horns, made by the G. Piel interests in Long Island City.

As is the case with the Soot Proof plug and Jones speedometer, the Long horn hereafter will be marketed through the 50-odd Johns-Manville branches located in the United States and Canada. The Piel factory in Long Island City will, however, continue to operate under Piel auspices, the transaction with the Johns-Manville people being in the nature of a selling arrangement only.

Incidentally, the Piel business, which heretofore has been conducted by the G. Piel Co., a registered trade name, has just been taken over by G. Piel & Co., a corporation organized under the laws of New York with an authorized capital of $100,000. Gottfried Piel, however, remains the dominant factor.

Ricker to Represent Big British House.

E. de Rodakowski, who arrived in this country two weeks since, heralded chiefly as the designer of the famous Brooklands track in England, came over with more than speedways in his mind. He proved to be also the managing director of the United Motors Industries, Ltd., of London, which is claimed to be the largest accessory house in Europe, and while here lost no time in appointing Chester S. Ricker, of Indianapolis, as his company's American representative and buyer. Ricker is best known as a consulting engineer and as the designer of the Henderson car. The head of the United Motors Industries is S. F. Edge, former managing director of the Napier Motor Co., and holder of a long string of world's records made on the track which de Dodakowski designed, and a past-master in the art of obtaining publicity.

Splitdorf and Apple Effect Arrangement.

Having discontinued the manufacture of the Splitdorflite, the Splitdorf Electrical Co., of Newark, N. J., has effected a "working arrangement" with the Apple Electric Co., of Dayton, O., whereby the Aplco lighting system will be sold and installed at all of the Splitdorf branches and service stations.

When General Manager Curtiss, of the Splitdorf company, was asked whether this unlooked for arrangement indicated that Splitdorf had taken out a license under Aplco patents, or would manufacture the Aplco device, he responded significantly, "Not yet." Pressed for more information, he admitted that "developments were possible" but he resolutely declined to be more specific.

Chalmers Adds Light "Six" at $1,800.

Following the trend of the times, the Chalmers Motor Co., of Detroit, has added a light "six" to its line. It will be known as the "six-48" and will utilize a 3½ x 5½-inch motor which, on a dynamometer test, has developed 54 horsepower, and will list at $1,800. Its wheelbase is 126 inches and it will be furnished in two body styles—a five-passenger touring car and a coupelette, the latter a two-passenger vehicle of the roadster type distinguished by a landaulet top which can be raised or lowered, thereby practically converting the car into a coupe when the top is up.

GERBER'S PLANS REACHING INTO SEVERAL DIRECTIONS

Abbott's Purchaser May Build Trucks in New Castle, Pa.—Talks Also of Bids for Alco and R. C. H. Property.

If even a part of the plans revolving in the brain of Edward F. Gerber, of Pittsburgh, Pa., come to a head, he sooner or later may prove one of the big men of the industry.

As is well known, Gerber, who attained recent prominence as a $400,000 creditor of the bankrupt Michigan Buggy Co., of Kalamazoo, last month asquired control of the Abbott Motor Co., of Detroit, since which time he has been busy not only outlining other plans but signing up former Michigan agents located in the extensive territory in the East which he tilled for the Michigan Buggy Co.

During the present week, A. C. Schafer, president and general manager of the Abbott Motor Co., and Leslie Sanders, its sales manager, retired from office, but their retirement has not served to affect the other lines of endeavor which Gerber has marked out for himself.

In the course of interviews with his dealers, he has let it be known that, among other things, he is behind the scenes in one of the bids for the R. C. H. factory in Detroit, and that he has acquired the former Penn Motor Car Co.'s plant in New Castle, Pa., which he says will be devoted to the production of commercial vehicles. As a short cut in that direction, he stated he had made an offer for the Alco business, but only yesterday, Leigh Best, vice-president of the American Locomotive Co., and as such in charge of the Alco department, declared that he had never heard of Gerber or his offer.

On the other hand, Gerber is credited with having stated that when, in the guise of a prospective purchaser, he sought to

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inspect the Alco books and inspection was refused, he attained his purpose by promptly purchasing four shares of American Locomotive stock.

In Detroit, the bidder whose name was associated with Gerber in the R. C. H. matter is reported to have declared that while Gerber had approached him nothing had come of it.

Gerber's purchase of the Abbott Motor Co. itself was brought about in somewhat unusual fashion. When he was negotiating for that property, there was pending against him in the Federal court in Pittsburgh a suit instituted by the Detroit Trust Co., as receivers for the Michigan Buggy Co., who were seeking payment for 325 Michigan cars and $40,000 worth of parts, which suit against him, on the bankrupt's books represented a value, in round figures, of $400,000.

Pending trial of the case on its merits, the Federal court granted an injunction restraining Gerber himself, E. F. Gerber & Co., the Pennsylvania Sales Corporation, Pennsylvania Vehicle Co., Pennsylvania Carriage Co., and all his other enterprises, from disposing of any cars, parts or property he owned or controlled into which went any moneys derived from the sale of the Michigan cars or parts.

This injunction was served on Gerber the day he was due to close the deal for the Abbott property and served to place him in a peculiar position. He had agreed to pay for the Abbott assets $237,500, of which he had already paid $25,000 in cash, but with all his possessions tied up by the injunction Gerber was put to it to obtain the necessary money, which he had planned to raise by selling some of his Pittsburgh real estate.

Gerber called the Abbott banking and merchandise creditors to his aid, and through their influence the Detroit Trust Co. consented to Gerber's disposition of the Pittsburgh property in question, but only in consideration of an agreement that of the money derived from the sale $160,000 be used to pay for the Abbott property, on which a mortgage to that amount was given the Trust company, which mortgage is now in force, as is also the injunction.

Gerber made an effort to have the injunction dissolved but his application was denied by the court; nor can he appeal from this denial as his agreement with the Detroit Trust Co., made when the mortgage was executed, stipulated that no appeal shall be made.

Auto Parts Leases Seven-Story Plant.

The Auto Parts Co., of Chicago, now located at 517 West Jackson Boulevard, has leased the seven-story double building at 737-739 on the same thoroughfare and will take possession immediately.

TRUCKS AND CARS COVERED IN NEW STANDARD WARRANTY

Chamber of Commerce Adopts Simplified Guarantee But Makes Few Changes—Hand-Book Specifications Also Standardized.

By way of simplifying adjustments and rendering plainer its meaning to the layman, the Automobile Chamber of Commerce, at its regular monthly meeting, held at the headquarters of the organization in New York City yesterday (Wednesday), revised its standard warranty, which, in the new form that has been adopted now covers both pleasure and commercial vehicles; at the same time, a standardized method of listing the specifications in its yearly handbook also was adopted, these two items constituting the principal elements of business, other than mere routine matters, which came before the meeting.

The change that has been made in the standard form of warranty, has the effect of making unnecessary the separate forms of guarantee which heretofore have been applied to pleasure and commercial vehicles. The warranty is essentially a revision of the old one with very little alteration in the wording except that a number of words considered to be superfluous and more or less confusing to persons not acquainted with the written language of lawyers have been eliminated; it will not be made public, however, until finally approved by the Chamber's counsel.

The standard specification blank that has been adopted for use in compiling the handbook is practically the same as its predecessor, except that it has been made slightly more elaborate.

It was the sense of the meeting that the Chamber should be represented at the forthcoming Panama-Pacific Exposition, but just how the matter will be arranged still is as much in doubt as when the subject was previously discussed; no definite action resulted from the discussion of the question.

Creditors' Objections Check R. C. H. Sale.

The sale of the R. C. H. Corporation's property in Detroit, which several times for the past two weeks has seemed on the point of consummation, is still "in the air." Two bids—one of $255,100 for all of the assets, and the other of $99,500 for the real estate and $184,000 for the physical assets—were made after the court gave Harris Bros. & Co. an opportunity to increase their bid, but acceptances of any sort have been checked by legal objections filed by the Kelsey Wheel Co., Herbert Mfg. Co. and one other R. C. H. creditor. It is now possible that the entire bidding may be reopened for a third time.

Studebaker Promotes Department Heads.

A. R. Erskine, who, as treasurer of the Studebaker Corporation, of Detroit, represents the New York interests, last week was elected first vice-president also, and henceforth will fill both offices. At the same time, the Studebaker people recognized the worth of a number of other department heads by advancing them to higher offices. James G. Heaslet, chief engineer, and Ernest R. Benson, sales manager, were both made vice-presidents, Heaslet remaining in charge of engineering production and Benson in charge of automobile distribution. Benson's elevation making it possible, A. I. Philp, assistant sales manager, was appointed sales manager of the automobile division, while Charles D. Fleming was appointed to the post of assistant treasurer, and H. E. Dalton to the position of chief auditor.

Michigan Property to be Auctioned.

Samuel L. Winternitz & Co., of Chicago, who bid in the property of the bankrupt Michigan Buggy Co., of Kalamazoo, by guaranteeing that not less than $225,000 would be netted by the auction sale they would conduct, will begin disposing of the property on Tuesday next, 9th inst. It is expected that the sale will continue at least one week and it is specifically stated that, notwithstanding reports to the contrary, all personal property will be sold in lots or parcels and not in bulk.

Jones Starter Sets Up Branch in Paris.

Its starter having been adopted for use on the Gregoire car, the Jones Electric Starter Co., of Chicago, has considered the French market sufficiently promising to justify the establishment of a branch in Paris. It is being operated under the title Societe Jesco at 35 Rue de Villejust.

Louis Hupp Goes to Briggs-Detroiter.

Louis G. Hupp, who, after retiring from the R. C. H. Corporation, organized the Tribune Motor Car Co., in Detroit, has relinquished that venture and joined the staff of the Briggs-Detroiter Co. The Tribune factory has been taken over by the recently organized Mercury Cyclecar Co.

Remy, too, Seeks Openings in Europe.

W. O. Kennington, of the engineering department of the Remy Electric Co., is now in Europe, where he will spend two months. He is visiting the manufacturers on the other side with a view of interesting them in the Remy starting and lighting and ignition apparatus.

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TEN PLUG MAKERS BOW TO CANFIELD PATENT HOLDER

Leaders in Trade Quick to Recognize Force of Court's Upholding of Mosler's Claim—Lump Sum Payments Preferred to Royalty.

Spark plug manufacturers have not been dilatory in recognizing the force of the United States Court of Appeals decision sustaining the Canfield patent, No. 612,701. During the past two weeks, nearly all of the more prominent ones have "stepped up to the captain's office" and obtained the necessary license from A. R. Mosler & Co., which owns the patent.

To date, and excepting Mosler himself and the Champion Ignition Co., of Flint, Mich., which latter recognized the patent three years ago, manufacturers to whom licenses have been granted are as follows: Jeffery-DeWitt Co., Detroit, Mich.; Champion Spark Plug Co., Toledo, O.; C. A. Mezger, Inc., New York City; Rajah Auto Supply Co., Bloomfield, N. J.; Hartford Machine Screw Co., Hartford, Conn.; Benford Mfg. Co., Mt. Vernon, N. Y.; Frontier Specialty Co., Buffalo, N. Y.; New York Mica & Mfg. Co., Auburn, N. Y.; Auburn Ignition Co., Auburn, N. Y.; and the Silvex Co., New York City.

Except in one instance, all of the licenses have been granted on payment of a lump sum agreed on by the parties in interest and based on the volumes of their business during the past year. As the patent has slightly less than two years of life in it, this procedure was deemed more desirable and expeditious than would the naming of a royalty which would require all of the red tape which goes with an accounting.

The sole exception is a comparatively small spark plug maker who made peace on a royalty basis of four cents per plug.

Grant Purchases Factory in Findlay.

After negotiating with several other cities, the Grant Motor Co., of Detroit, finally has purchased the plant in Findlay, O., previously occupied by the defunct Findlay Motor Co., and will immediately proceed to the production of the appealing $495 light car which was developed and heralded several months ago and which, in the meantime, has been extensively tried out on the road. The Findlay factory affords approximately 50,000 square feet of floor space and is completely equipped.

The Grant company plans to produce 5,000 cars for the 1914 market, practically all of which already have been contracted for by some 200 dealers who have been appointed. The officers of the company are: George D. Grant, president; C. A. Grant, vice-president; H. J. Koehler, second vice-president; D. A. Shaw, secretary and treasurer; George S. White, sales manager.

Equipment Company Gets Weed Account.

After handling Weed tire chains for many years in a jobbing way and on a large scale, the Motor Car Equipment Co., of New York, has been appointed sole distributer of the Weed product in the metropolitan district, which comprises New York City, all of Long Island and Westchester County, and Jersey City and Newark in New Jersey. The arrangement went into effect December 1st. Stocks will be carried at both the Motor Car Equipment's headquarters, 55 Warren street, and at its uptown branch, 238-240 West 56th street. The Equipment company's Weed chain department, to which naturally much more importance hereafter will be attached, will be in charge of Gene Carbrey.

Pittsburghers Acquire Harroun Carburetter

Ray Harroun, of the Ray Harroun Co., and the Harroun carburetter have been absorbed by the Electric Renovator Mfg. Co., of Pittsburgh, Pa., which, it is stated, is controlled by a group of the largest independent oil operators in America. For the time being, the Harroun factory will remain in Indianapolis, but ultimately will be removed to Pittsburgh. Harroun will go with it and will bend his efforts toward the development of the principles embodied in his carburetter, to the end that they may be applied to all forms of internal combustion motors.

Dealers Co-operate in Sale of Gasolene.

Rivals in the sale of cars, five of the best known dealers in Los Angeles have joined hands in the organization of the National Supply Co., the most immediate purpose of which is the establishment of a chain of gasolene supply stations in that California city. Eight of them already are in operation and about 20 others are in prospect. The company has been incorporated with an authorized capital of $25,000, the incorporators being H. L. Arnold, Hudson distributor; Don Lee, Cadillac; E. C. Anthony, Packard; Cuyler Lee and Phil Prather, Cadillac.

Willys Wants Times Square to Pay $5,000.

When John N. Willys recently took over a manufacturing plant—a habit he has—he sold part of the equipment or contents to the Times Square Automobile Co., of New York and Chicago, the "world's greatest price wreckers," and now a suit has resulted from the transaction; Willys this week instituted action in the Supreme Court for New York county for $5,000, the alleged purchase price of the goods.

ASSOCIATION OF NEW YORK STATE DEALERS COMPLETED

Organization Formally Launched and Officers Elected at Albany Meeting—Day, New York, President —Two Kinds of Membership.

It now truly may be said that the Automobile Trade Association of New York State is in being. Having laid the groundwork the previous week, the dealers interested again gathered in the Ten Eyck, in Albany, on Tuesday last, 2nd inst., and adopted that title for the organization and elected the following officers: Arthur M. Day, of New York Dealers' Association, president; C. D. Hakes, Albany Dealers' Association, treasurer; Charles A. Stewart, New York Association, secretary and general manager. These officers and Geo. H. Norris, Syracuse Association; Thomas Northway, Rochester Association; H. L. Carpenter, Brooklyn Association, and E. Lascaris, Importers' Alliance, comprise the board of directors.

Although a New York body, the association will be incorporated under the laws of Connecticut, which offer certain advantages, but the real headquarters will be in Hotel Woodward, in New York City, where the New York Dealers' Association has its office, of which General Manager Stewart is in charge.

While local associations only had to do with the formation of the State organization, unaffiliated car dealers, supplymen, garagemen and importers will be welcomed and will be given a voice and vote, two forms of membership being provided for, in each of which the dues are $5 per member. The two classes, as defined by the bylaws, are as follows:

"Corporation or Association Membership —Any automobile trade association, corporation or club in any part of the State of New York, including motor truck clubs, garage associations, automobile importers' salons, and such associations and corporations composed of those dealing in or having to do with accessories or parts or equipment of automobiles, and any association or corporation operating in the State of New York, the membership of which is made up exclusively of those engaged in the business of dealing in motor vehicles, or their accessories, parts or equipment.

"Individual members. Persons or individuals that are engaged in and have capital invested in the automobile trade in the State of New York, which shall be taken to include garage owners or persons or individuals who partially or exclusively are engaged in the business of dealing in auto-

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mobiles, motor vehicles or their accessories, and have capital invested therein, including garage owners or importers or dealers in accessories, who are not members of any organization or association member, shall be eligible to membership as individual members; such individual membership shall be at an end on such member becoming a member of any corporation, association, club or other body which is a member of this corporation."

The balance of power will at all times rest with the corporation or association membership, which must be represented by at least six of the ten directors who will constitute the board, and all of whom will hold office for one year only.

The directors may appoint such committees as they deem necessary, but the by-laws themselves provide only for an executive committee consisting of five members, not less than three of whom shall be representatives of the corporation or association membership, and this committee will have all the powers of directors when the board is not in session.

Monthly meetings will be held except during the months of May, June, July and August.

Votes by proxy are restricted to the "corporation or association members," which will have as many votes as each has members for whom it pays dues. Each individual member will, of course, have one vote.

Times Square Treasurer Goes Abroad.

Louis Mansbach, treasurer of the Times Square Automobile Co., of New York, sailed yesterday to Europe where, he has let it be known, he will visit the "various agents handling their automobiles and automobile accessories and establish others." Until this announcement was made, and as the Times Square business was largely of a cut-price jobbing nature, it was not known that the company had developed an agency system abroad.

Court Refuses to Order Walpole Sale.

Until the receivers render their report, at least, the plant of the Walpole Tire & Rubber Co., of Walpole, Mass., will not be disposed of. The petition of the creditors, representing approximately $1,000,000 of the liabilities, asking that the property be sold, was denied by the Federal court in Boston on Monday last, 1st inst.

Federal to Build Branch in 'Frisco.

The Federal Rubber Mfg. Co., of Milwaukee, has let contracts for the erection of a new building in San Francisco. It will be occupied by its Pacific Coast branch, which will be located on the southwest corner of Van Ness avenue and Sutter street and will be completed by February 1st.

REDUCTION OF TIRE PRICES MADE ALL ALONG THE LINE

Two Makers Meet Goodrich Cut on Plain Treads but Not on Non-Skids—All Others Reduce Proportionately.

Following the Goodrich-Diamond reduction of approximately 18 per cent., the prices of all other tire manufacturers, as expected, have been tumbling during the past week. In but two instances, however, have the Goodrich-Diamond prices been met, and then only so far as plain treads are concerned.

Those who met the Goodrich figures in this regard are the United States Tire Co. and the Goodyear Tire & Rubber Co., the prices of whose 34 x 4 plain tread casings, to cite the most popular size as an example, were lowered from $29.80 to $24.50. Neither the United States nor the Goodyear companies, however, have met the Goodrich quotations on non-skids. Goodyear has cut, but the new figure still rules about 10 per cent. higher than the Goodrich price, while the United States has not only made no reduction whatever but is inclined to stand pat and maintain its present non-skid prices, the nobby tread at $38.45 and the chain tread at $35.30 for the 34 x 4 size; whereas the Goodrich non-skid price is $26.05, a reduction of $5.45.

So great was the diversity of prices that existed that the reductions of the past week have not served to make them equal, although practically all of them are within a few cents of each other. Thus, Firestone 34 x 4 plain treads are now $26.20, as against $31.35; Fisks are $26.35, instead of $32, and Ajaxes $26.30 as compared with the old price of $32. Firestone 34 x 4 non-skids have been reduced from $36.05 to $30.50, and Fisk non-skids from $36.65 to $31.65.

Firestone and Fisk tubes, which always have been quoted at higher prices than the others, have also felt the pruning knife, but in the case of the latter a correspondingly higher scale is maintained. Whereas Goodrich reduced 34 x 4 tubes from $5.65 to $4.90, Fisks are reduced from $6.20 to $5.60; Firestone, however, reduced tubes from $5.95 to $4.90, thereby meeting the Goodrich cut.

Because of change and changing conditions in the automobile manufacturing end of the industry, there are those who have assumed that the reduction in tire prices was at least to some extent influenced thereby and that the effects will be seen in future balance sheets of the tire companies.

Horace DeLisser, of the Ajax-Grieb Rubber Co., however, points out that there is no reason why this should be the case. He figures that it will be necessary for tire makers to account for a decrease of about $40,000,000 in revenues, occasioned by the reduced prices, but he is confident that the loss will be made up by a greater market for tires during 1914. This, he declares, can be determined by simple reasoning.

"Put the car output of 1913 conservatively at 400,000 cars," he says. "This meant 400,000 sets in 1913. For 1914 it will mean six tires to a car, for these new sets wear out and must be replaced and spares must be carried. Then, again, as I figure it, the average life of an automobile is about five years. At that rate, there are about 150,000 cars annually that go to the scrap heap.

"They are replaced, because motorists keep right on using cars. Therefore, at the very least there is a demand for 150,000 sets additional for 1914, not to mention the many cars already in use that have not yet reached the end of 'life.' It can be seen that each year, as long as any new cars at all are made, means more tires called for than in the preceding year."

More Crude Rubber in Tire Trade Law.

Crude rubber again has appeared as a cause of litigation within the tire trade; this time the Frontier Tire & Rubber Co. of Buffalo, is the defendant, being sued by Charles T. Wilson in the Supreme Court for New York county. He charges that he sold to the Frontier company and delivered to it September 27 last 1,365 pounds of Prime Manicoba Plantation Crepe rubber at $1.11 a pound, and that September 29 the Frontier company said it didn't want the rubber and asked him to sell it.

Wilson sold it, he states, October 18 at 48 cents a pound, a loss to him of $859.95 in profits he would have secured had the sale gone through at $1.11. Besides this sum there is a note for $510.50 dated September 25 and payable November 15 which went to protest with a fee of $1.35, making a total of $1,371.80.

Service on Mansfield Tire Not Allowed.

Because George W. Henne, of the Mansfield Tire & Rubber Co., was in New York City as a witness in a lawsuit when he was served by the Automobile Tire Co. in actions against him and the Mansfield company, the Supreme Court for New York county has set aside the service as improper; further progress in these cases will be impossible unless other service is secured. The Automobile Tire Co. claims damages growing out of tire manufacturing contracts, but the Mansfield company declares that it is unworried by the suits and is confident of the outcome.

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The Week's Incorporations

Detroit, Mich.—Ontario Motor Co., under Michigan laws; authorized capital, $10,000; to deal in motor cars.

Detroit, Mich.—United States Auto Supply Co., under Michigan laws; authorized capital, $10,000; to deal in motor cars.

Birmingham, Ala.—Airless Tire Filler Co, under Alabama laws; authorized capital, $2,000. Corporators—J. D. Smith, W. E. Oldham and others.

Toledo, O.—Toledo Auto Cycle Car Co., under Ohio laws; authorized capital, $20,000. Corporators—A. L. Mayer, Thad S. Powell and John J. Keil.

Detroit, Mich.—Saxon Motor Co., under Michigan laws; authorized capital, $250,000; to manufacture motor cars. Corporators—H. M. Wirth, R. E. Cole and others.

Milwaukee, Wis.—Cycle Car Sales Co., under Wisconsin laws; authorized capital, $5,000. Corporators—Ray J. Everhardt, Geo. W. Kliegel and Alex C. Templeton.

Cleveland, O.—Knight Motor Repair & Garage Co., under Ohio laws; authorized capital, $5,000. Corporators—Arthur House, Frank Kyle, Frank K. Schaut and others.

Birmingham, Ala.—Automobile Remodeling Works, under Alabama laws; authorized capital $5,000. Corporators—C. S. Sibley, Kenneth Underwood and Frank B. Cornell.

Lima, O.—Lima Motor Transit Co., under Ohio laws; authorized capital, $10,000; to operate a motor transit. Corporators—W. S. Pierce, Fred K. Cook and W. E. Berryman.

Detroit, Mich.—Transportation Engineering Co., under Michigan laws; authorized capital, $1,200; to manufacture motor equipment. Corporators—R. J. Macklin and R. F. Beach.

Muncie, Ind.—Ross Motors Co., under Indiana laws; authorized capital, $25,000; to manufacture motor car accessories. Corporators—H. V. Hancock, V. H. Hancock and E. T. Ross.

Memphis, Tenn.—Tri-State Auto Co., under Tennessee laws; authorized capital, $15,000. Corporators—W. H. Court, R. F. Chew, Jr., J. H. Poston, Jr., D. H. Crump and R. T. Crenshaw.

Detroit, Mich.—Headlight Support Co., under Michigan laws; authorized capital, $50,000; to manufacture automobile accessories. Corporators—A. A. Caille, Charles R. Chisholm and others.

Syracuse, N. Y.—Sagamore Motors Corporation, under New York laws; authorized capital, $75,000. Corporators—Julian S. Brown, Charles G. Hanna and Ernest W. Lawton, all of Syracuse.

North Yakima, Wash.—Johns-Tucker Co., under Washington laws; authorized capital, $5,000; to conduct a retail sales business and machine shop. Corporators—A. A. Johns and Bismark Tucker.

New York, N. Y.—Roland Gas-Electric Vehicle Corporation, under New York laws; authorized capital, $200,000. Corporators—Percy K. Hexter, Roland R. Conklin and Stanley L. Conklin, all of 1 Wall street.

Chicago, Ill.—Silent Flyer Motor Co., under Illinois laws; authorized capital, $15,000; to manufacture motorcycles and accessories. Corporators—William M. Melling, A. H. Doorfler and Frank Doorfler.

Indianapolis, Ind.—Central Prest-O-Ceal Co., under Indiana laws; authorized capital, $50,000; to manufacture accessories and supplies for motor cars. Corporators—H. L. Archey, F. K. Gardner and G. C. Grimes.

Rochester, N. Y.—H. L. F. Trebert Rotary Motor Co., under New York laws; authorized capital, $200,000. Corporators—Henry L. F. Trebert and Martin J. Shrag, both of Rochester; L. Gerome Ogden, Penn Yan.

Chicago, Ill.—Petschel Storage & Battery Co., under Illinois laws; authorized capital, $31,000; to manufacture electrical novelties. Corporators—R. A. Heisch, G. M. Merker and H. L. Wuerffel, all of Chicago.

Seattle, Wash.—Seattle Motor Speedway Corporation, under Washington laws; authorized capital, $200,000. Corporators—J. C. Hayward, Harry W. Doherty, A. B. Simmernacher, Howard S. Amon and R. G. Dennev.

Brooklyn, N. Y.—De Luxe Garage Co., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—Frank Staendel and Katherine Staendel, both of 149 Rodney street; Harry B. Potter, 1321 Avenue O.

Chicago, Ill.—LeRoy Franz Mfg. Co., under Illinois laws; authorized capital, $10,000; to manufacture and sell automatic transmissions, fillers, motor car accessories, etc. Corporators—Calvin H. Burks, Earner Franz and LeRoy E. Franz.

Indianapolis, Ind.—National Automobile Equipment Co., under Indiana laws; authorized capital, $10,000; to manufacture electrical and mechanical devices for motor cars. Corporators—N. Burnham, J. A. Martz and G. B. Martz.

New York, N. Y.—Broadway Auto Sales Co., under New York laws; authorized capital, $2,000. Corporators—Benjamin F. Thomas and Richette G. Randolph, both of 213 West 53d street; Louise E. Jeter, 3140 Heath avenue, Kingsbridge.

Brooklyn, N. Y.—Eero Motor Vehicle Corporation, under New York laws; authorized capital, $10,000. Corporators—Adelbert E. Parke, 476 Sixth avenue; Eero W. Halin, 850 Gion place; Herbert Lovinger, 789 Elsmere place, Bronx.

Wheeling, W. Va.—Tristate Motor Car Co., under West Virginia laws; authorized capital, $10,000; to deal in motor cars. Corporators—Louis P. Frobe, Triadelphia; G. E. Griffith, Morris Jacobs, S. K. Johnson and Thomas Halpin, all of Wheeling.

Brooklyn, N. Y.—Bedford Auto Painting & Repairing Co., under New York laws; authorized capital, $1,000. Corporators—John Sargh, 312 East Houston street, New York; Joe Kaufman, 128 Allen street, New York; Abraham Rosenblatt, 136 Stockton street.

Canisteo, N. Y.—Automobile Machine Co., under New York laws; authorized capital, $300; to manufacture springs and other parts for motor cars. Corporators—Charles B. Schaumberg, Joseph L. Schaumberg and William F. McGreevy, all of Hornell, N. Y.; Charles L. Thomas, Canisteo.

Changes in Capitalization.

Cincinnati, O.—Nyberg Auto Sales Co., from $25,000 to $7,500.

Chicago, Ill.—Century Rubber Works, from $50,000 to $100,000.

Milwaukee, Wis.—Feilbach Motor Co., from $50,000 to $100,000.

Cleveland, O.—Standard Motor Truck Co., from $5,000 to $50,000.

Indianapolis, Ind.—Premier Motor Mfg. Co., from $200,000 to $700,00.

Dayton, O.—Automatic Lamp Control Co, from $30,000 to $100,000.

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AND NOW TWO PRIMING PLUG PATENTS ENTER THE ARENA

Buffalo Companies Warn Trade of Basic Right to Priming Device—Grossman Sees Merit in Claims and Takes Out Licenses.

Apart from the recent court decision sustaining the Canfield patent, which gave to A. R. Mosler & Co., of New York, the rights to all chambered types of spark plugs, the makers of those very necessary articles are being called upon to meet still another patent situation, one involving the use of priming plugs or other priming devices which form a part of their respective plugs.

The two patents which are claimed to cover such priming devices are: No. 642,167, granted January 30, 1900, to Frederick R. Sims, of London, England, and covering an "Electric Sparking Plug for Explosion Engines"; and No. 915,896, granted June 13, to John G. Shea, of Detroit, covering a "Spark Plug." Sims is the inventor of the well known magneto bearing his name.

Both patents are owned jointly by the Frontier Specialty Co. and the Czar Ignition Co., both of Buffalo, and as owners of these grants they have circulated warnings to the trade, asserting that the patents are basic so far as priming plugs are concerned and that prosecution is likely to follow failure to take out licenses.

So far as known, neither patent has been litigated, but the Emil Grossman Mfg. Co., maker of the Red Hed spark plugs, upon advice of its legal counsel, has taken out licenses; they bear date of November 22 and are so inclusive as to cover not only all future production of the Grossman company but all its past manufactures. The action of the Grossman company is regarded by the owners of the patents as a recognition of their strength and it is stated that more may be heard of the Buffalo companies and their newly heralded possessions.

The patents, while covering a priming device, are different. The Sims patent is designed as a part of an existing type of plug, the object of the patented part being to deposit the priming liquid at the point of spark. The sketch of the device shows a valve at the top of the plug, a priming cup and a small hole leading down through the center of the plug to the points. The Shea patent claims to cover a whole plug of which a priming arrangement is a part.

This is the second time within a month that the Grossman company has bowed before a patent holder. Late in October it purchased a controlling interest in the William Barber spark plug patent, No. 732,032, after Barber had filed an infringement suit. The Barber patent claims to cover two-piece insulation.

Court Takes Chains Away from Junk Man.

Those old Atlas and Premier tire chains which Robert T. Gray, a New York City junk man, bought last month with a possible expectation that he was getting a bargain, have developed into a "dead horse" or a "white elephant," whichever nomenclature Gray prefers.

The Weed Chain Tire Grip Co., after filing suit against him for infringing the Parsons patent, No. 723,299, this week secured an order of sequestration from Judge Lacombe in the United States District Court for the Southern District of New York. This means that the chains will be taken possession of by a United States marshall and held until the termination of the suit, and if the Weed company wins, as it generally does, the chains may find their way to the bottom of New York Bay. The chains are the product of companies which the Weed company enjoined some time ago.

In connection with the same matter the Weed company this week filed suit in the same court against Samuel Hollander, Morris Benjamin, Herbert I. Segal and Ephriam Nobel, second-hand machinery dealers with offices at 30 Church street.

Texaco Oil Makes Change of Presidents.

Despite opposition, the Eastern men who control the Texas (Oil) Co. dominated the annual meeting, which occurred last week in Houston, Tex. They elected three new directors, who in turn elected E. C. Lufkin president, in place of J. S. Cullinan; Arnold Schlaet, T. J. Donoghue, R. C. Holmes, G. L. Noble and W. A. Thompson, Jr., were elected vice-presidents. C. P. Dodge was elected secretary to succeed J. L. Austry. A. L. Beaty, formerly associate general attorney, was elected general attorney to succeed J. L. Autry.

The new directors elected were: J. N. Hill, to succeed the late Charles G. Gates; A. L. Beaty, W. A. Thompson, Jr., and J. H. Lapham, succeeding J. S. Cullinan, J. L. Autry and W. C. Hogg.

Another Disputed Repair Bill in Suit.

Another instance of the necessity or advisability of previous agreements concerning repair work is apparently indicated by a suit instituted last week in Council Bluffs, Ia., where D. E. Butler filed suit against the Raapke Motor Co. because of a disputed repair bill. The company demands $300 and he declares the job is worth but $200. He is suing for the possession of his car and $100 damages for its alleged wrongful detention.

AMERICAN POSSESSIONS BUY BETTER CARS IN SEPTEMBER

Pay $1,561 as Compared with $1,149 a Year Ago—Total of Cars Less, Value Greater—More Tires to Porto Rico and Hawaii.

Even though the non-contiguous American possessions—Hawaii, Porto Rico, the Philippines and Alaska—decreased by $21 the average price of cars bought during the first nine months of the present year, they deviated from the average during September last and increased the average value by $412, as compared with September, 1912. As was the case in August, the possessions bought fewer cars for more money, the number being 27, or 23 per cent., less, and the value $6,048, or 4 per cent., greater.

The average price per car in September, 1912, was $1,149 and in September, 1913, $1,561, a gain of 36 per cent. The only real gain was made by Hawaii, which bought three, or 8 per cent., more cars and paid $8,670, or 16 per cent., more for them. In September, 1912, it paid $1,469 and in that month of this year $1,575, a gain of $106, or 7 per cent. The average prices paid by Porto Rico were: September, 1912, $801; September, 1913, $1,104. By the Philippines: 1912, $1,098; 1912, $1,919. Parts lost by $949, or 6 per cent.

During the nine-month period ending with September of this year the purchases of the possessions increased by 57 cars, or 5 per cent., and $59,110, or 3 per cent. Parts lost by $7,009, or 3 per cent.

Tire shipments, so far as given by the Federal statisticians, were: Hawaii—September, 1912, $26,998; 1913, $36,420; gain, $9,428, or 35 per cent. Porto Rico—September, 1912, $28,082; 1913, $37,044; gain, $8,962, or 32 per cent. The figures follow:

	September 1912 No.	September 1912 Values.	September 1913 No.	September 1913 Values.
Hawaii—Cars	37	$54,339	40	$63,009
Parts*	...	5,195	...	6,633
Porto Rico—Cars	26	20,837	18	19,876
Parts*	...	8,670	...	6,493
Philippines—Cars	54	59,303	29	55,642
Parts*	...	2,551	3	2,944
Alaska—Cars	...	.....	...	2,000
Parts*	...	227	...	224
Total cars	117	$134,479	90	$140,527
Total parts*	...	16,643	...	15,694
Total cars and parts*	117	$151,122	90	$156,221

	Eight Months Ending September 1912 No.	Eight Months Ending September 1912 Values.	Eight Months Ending September 1913 No.	Eight Months Ending September 1913 Values.
Hawaii—Cars	423	$682,361	467	$811,922
Parts*	...	52,641	...	68,383
Porto Rico—Cars	313	455,612	205	263,731
Parts*	...	90,552	...	66,183
Philippines—Cars	370	486,345	481	605,526
Parts*	...	47,224	...	49,818
Alaska—Cars	13	18,064	23	22,013
Parts*	...	3,862	...	3,094
Total cars	1,119	$1,642,382	1,176	$1,701,492
Total parts*	....	194,279	....	187,270
Total cars and parts*	1,119	$1,836,661	1,176	$1,888,762

* Does not include engines and tires.

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In the RETAIL WORLD

The Opper-Van Vleet Auto Co. has en-ered the trade in Omaha, Neb. It has pened salesrooms for Kissel and Krit ars at 12th and Farnam streets, in the uarters formerly occupied by the United fotor Omaha Co. J. M. Opper formerly as a district manager for the Maxwell fotor Co. and Charles Van Vleet, his pres-nt business associate, was his assistant. oth men have been connected with the ade for everal years, having been located York, Lincoln and Omaha. They plan erect a new building in the spring.

The Reliance Automobile Co., of San rancisco, of which Samuel M. Crim is the ead, has taken over the Auto Sales Co., hich handled the Velie car in that city. reviously the Reliance company handled lco trucks only, and following their dis-ontinuance the Knox commercials were aken on, which, with Velie cars, will here-fter constitute the Reliance representation.

The Resthaven Garage, located in Wau-esha, Wis., at Hartwell and Arcadian ave-ues, has been leased by the Spring City uto Co. The latter consists of E. A. Spin-er, of Milwaukee, and P. J. Wolf and W. I. Evans, of Menomonee Falls, Ford deal-rs in that town. The Resthaven Garage is ear the Resthaven Hotel, a summer and inter resort.

W. W. Garabrant, formerly district man-ger for the Franklin Automobile Co. in ie Kansas City terrirtory, and for a num-er of years a traveling engineer for the ame company, has entered the trade as a ranklin dealer in Utica, N. Y. He will ade under the style Franklin Motor Car o.

Reif & Leinbach, of Reading, Pa., are recting a two-story garage, on Madison venue, between Walnut and Elm streets; ie repair department will be located at the ar of the second floor. The equipment cludes a 20-foot turntable on the ground oor and an electric elevator.

Fleming & Brown, of Kankakee, Ill., have old their Reo agency to Gray & Swanell, lso of Kankakee; the business is located t 224-26 Station street. Fleming will re-re from the trade to look after his farm-ng interests, while Brown may reenter the ade later.

The Cyclecar Sales Co. has been formed Milwaukee, Wis., and will distribute Imp cyclecars; the members of the company are A. C. Templeton, former sales manager of the Kissel agency, and George W. Kliegel, secretary and treasurer of the Davis Mfg. Co.

Harry Roose and C. E. Lane have organized the Roose-Lane Auto Co. in Kalispell, Mont. They will operate a garage and handle Apperson, Buick and Chalmers cars at 16 1st avenue west. They formerly operated a garage on 1st avenue east, but sold it.

The Automobile Co. of Philadelphia has opened a new service station at 222-26 North 21st street, Philadelphia, Pa. The company handles Cole and Marmon cars. The company recently took possession of new salesrooms at 2037-39 Market street.

B. L. Losey, formerly of Charlotte, Mich., has purchased the Tracy Garage in Elkhart, Ind., located at 117 Harrison street; he will add equipment and operate the business. W. J. Tracy, the former owner, may locate in Chicago.

Charles E. Lair and Mortimer J. Everet, proprietors of the Gloversville Garage, located on Washington street, Gloversville, N. Y., plan to dissolve partnership; Lair will withdraw from the firm and enter business for himself.

Harvey R. Smith has sold the Fillmore Garage, in Fillmore, Cal., to K. Leegan, of Piru, in the same State; the bicycle repair-shop, operated in conjunction with the garage, was sold at the same time to Gardner Bookman.

H. P. Kinsella, formerly manager of the Commercial Motor Car Co., of Wilkes-Barre, Pa., has entered the trade for himself; he has secured the Velie agency and also stocks Fisk tires and a line of accessories.

The Washington Motor Car Co. has been formed in Seattle, Wash., to act as a used car agency in that city; C. R. Williams and William Matheson are among the principals. The company is located at 1409-13 Broadway.

Frank and Cyril Reed, T. P. Campbell and R. C. Ragon, of Oakesdale, Wash., have entered the garage trade; they have taken over a garage formerly operated by the Oakesdale Land Co.

Alva Jones & Son are about to enter the garage trade in Mansfield, Ill. They have purchased for $2,000 a Main street building formerly owned by Howard Nash, of Champaign, Ill.

William Paoge has purchased the interest of J. E. Mavginnes in the Sunset Rubber Co., in Santa Barbara, Cal. The company is a retailer of tires and rubber accessories.

I. Zabriskie, formerly of Stanley, Ia., has taken over the Peterson Garage in Cedar Falls, in the same State; Zabriskie will enlarge the business and secure a car agency.

William C. Thomas has purchased the interest of E. C. Williamson in the Thomas-Williamson Co., of Jacksonville, Fla. The company handles Haynes and American cars.

The Ensign Motor Co. has entered the trade in Springfield, O., at 205-7 South Fountain avenue; the company handles Cole, Stevens-Duryea and Oakland cars.

William H. Bradley, of Pulaski, N. Y., is about to become a garage man; he is remodeling his carriage and wagon plant on Jefferson avenue for this purpose.

Frank Kilgore and Samuel C. Sparger have formed the Bristol Auto Co., in Bristol, Tenn. They will open a garage in the James building, on Lee street.

A. E. Gray and Fred Swannell have purchased the Fleming & Brown Auto Sales Co. in Kankakee, Ill. The place of business is on Dearborn avenue.

H. P. Schamp and E. M. Petrie, of Eaton Rapids, Mich., have taken over the Minnie & Tubbs Garage; they will operate under the style Schamp & Petrie.

The Central Motors Co. has opened a garage and repair-shop in Owensboro, Ky. The principal stockholders are Elmer Little and William R. Cavin.

Roscoe Branch, of Port Jervis, N. Y., has purchased the Whipple Garage in Monticello, in the same State; he will take immediate possession.

William Moore, formerly of Colburn & Moore, of Oneonta, N. Y., has branched out for himself; he has opened a garage on Windsor avenue.

Mahlon Sweet and Rolo Drain have purchased the Mozach Garage, in Eugene, Ore. They will operate it under the style Sweet-Drain Auto Co.

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H. B. Swalley, of Nebraska City, Neb., has sold his garage to Alexander W. Neihart, of Dunbar, in the same State; it is located on 10th street.

W. E. Anderson and Joseph Green have entered the trade in San Marcos, Tex. They have styled their business the Auto Sales & Supply Co.

Curtis B. Lyon, of Rochester, N. Y., has become a dealer; he has taken the Pathfinder agency and will locate on North East avenue.

Angus J. Crites, of Bakersfield, Cal., has sold his interest in the Ford Garage to his partners, George Haberfelde and E. A. Test.

Ellis Shoner has purchased the garage business of John A. Finnessey, of Morristown, N. J.; it is located on Pine street.

The Wallerboro Garage Co. has been formed in Wallerboro, S. C. The company will handle cars and operate a garage.

George A. Evans, of Advance, Mo., plans to enter the trade in Dexter, in the same State; he will handle Fords.

The Morgan Torrenge Automobile Co., of Lafayette, Ind., has changed its name to West Side Automobile Co.

Joseph H. Schroeder plans to open a garage and repair-shop in St. Louis; he will locate on North 12th street.

Erickson & Bastedo have opened a new garage in New Brunswick, N. J.; it is located at 127 Church street.

J. C. Stoebe and Ephriam Nelson, of Marion, Ind., have become dealers; they have the Maxwell line.

Kratochville & Nohring have opened a garage in Houston, Tex. It is located on West 4th street.

Elmer Denman, formerly of Bakersfield, Cal., has opened a garage in Meridian, in the same State.

Martin S. Lewis, Jr., of Los Angeles, has opened salesrooms in Colton, Cal. He has the Ford agency.

John G. and Robert Dorward have purchased the Alameda (Cal.) Garage; they will operate it.

Keir & McCourt, of Ida Grove, Ia., have sold their garage and salesrooms to Herman Mess.

The Rayfield Cycle Car Motor Co. has been formed in Rockford, Ill. It will handle cyclecars.

The Oswego County Auto Co. has been formed in Mexico, N. Y. It will stock Reo cars.

C. P. Hall, of Shelbyville, Ky., is erecting a garage; he will operate it himself.

J. D. Steiner has opened a garage in Greenville, Ala.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Forest H. Peabody has been appointed manager of the Ford branch in Louisville, Ky. Previously he was assistant manager of the Ford establishment in Boston.

J. F. Walsh, for several years manager of the Oakland branch in Boston, has been transferred to the factory in Pontiac, Mich., where he will be attached to the sales department.

W. P. Taylor has been appointed general manager of the Hess Spring & Axle Co., of Cincinnati. Previously he was factory manager of the Lewis Spring & Axle Co., of Jackson, Mich.

A. L. Longtin, for the past 11 years identified with the Knox Automobile Co., of Springfield, Mass., latterly as manager of production and costs, has resigned that post. He has not yet made a new connection.

A. J. Kleinmeyer, for the past year manager of the Jeffery branch in San Francisco, which recently was taken over by other interests, has been transferred to the Jeffery factory in Kenosha, Wis., of which the general manager is Lewis H. Bill, who himself for many years managed the San Francisco branch. Kleinmeyer will be attached to the sales department.

George V. Lyons, who served as manager of the King branch in New York until June last, when he removed to Los Angeles to become sales manager for the Alco Motor Sales Co., has resigned the latter connection to become the manager of the Lord Motor Car Co.'s truck department in that city. As such, he will have charge of the sale of Garfords, with which he was once identified while in the East.

R. E. Gerspacher, a former district manager of the Michelin Tire Co., has been elected secretary and treasurer of the Stoddard-Dayton-Maxwell Repair Co., of Dayton, O., to succeed Charles Shellman, resigned. He will assume his new duties January 1st. B. A. Rhoades and J. W. Glashy, who formed the company several months ago, will retain their interest in the business which, apart from general repair and machine work, included the manufacture of any part of any car.

W. E. Cameron, former Western sales manager of the Motz Tire & Rubber Co., has been promoted to the office of assistant sales manager with headquarters at the factory in Akron. R. O. Brinker, who has previously manager of the Motz branch in Washington, D. C., also has been advanced—to the management of the company's commercial tire department.

M. A. Enders, manager of the Ford branch in Cincinnati, has been transferred to the management of the larger distributing branch in Fargo, North Dakota. He changes places with G. W. Reynolds, who, of course, will hereafter serve the Cincinnati establishment.

Recent Losses by Fire.

Milwaukee, Wis. — Hickman-Lauson-Diener Co., 135-43 8th street; salesrooms and garage destroyed, 38 Fords damaged. Loss, $120,000.

Baltimore, Md.—F. W. Sandruck & Sons, North Howard street; salesrooms, garage, 11 cars, motorcycles and 25 bicycles practically destroyed. Loss, $75,000.

Chadds Ford, Pa.—Preston B. Lee; garage, tank house and barn destroyed. Loss $10,000.

Long Island City, N. Y.—Standard Oil Co., Devoe yard, East River; oil can factory destroyed. Loss, $150,000.

Hillsdale, N. J.—Ira Durie; garage, two cars and residence destroyed. Loss, $4,000.

Dunmore, Pa.—T. B. McClintock, Jefferson avenue; garage and three cars destroyed. Loss, $5,000.

Durant, Ia.—H. F. Bierkamp; garage, salesrooms and implement store destroyed. Loss, $12,000.

Worcester, Mass.—Edward A. Rider, 341 Pleasant avenue; garage and five cars damaged. Loss, $2,000.

Minor Business Troubles.

Six accident damage claims aggregating $60,000 against F. H. Anger, of 3414 West Fullerton avenue, Chicago, are the principal portion of his liabilities in a bankruptcy petition he has filed in the Federal court; the total is $69,049.30. His assets are $3,034.12. He operated an automobile delivery.

James B. Archer, copartner with Fred Turner, a former St. Paul detective, in the National Motor Car Co., of that city, has brought suit for a dissolution and an accounting; Archer claims that since the formation of the company—October 1, 1912—Turner has impeded its development, has caused it to operate at a loss, has tried to intimidate Archer into transferring part of his interest to Turner, has withdrawn $1,300 of the company's bank account and has taken possession of an automobile which was valued at $2,500, the property of the firm.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
IOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
AXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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REDUCING THE PERILS OF THE HIGHWAY.

Periodically, as in New York this week, the police are prodded into uncommon activity and, in the interests of public safety, raids are made on automobilists. Great numbers of them are haled to court and punished; the public prints applaud, the man who makes his living chiefly by exploiting automobile accidents, thereby inflaming the populace, interviews himself approvingly, and probably all save the arrested drivers agree that if the raids are continued, the highways will be rendered safer.

Popular notion to the contrary notwithstanding, all motorists seek to avoid accidents, and while they may wonder why the unlighted tail light of an automobile should constitute more of an offense than an unlighted side light on a horse-drawn buggy, few of them will rail loudly at the punishment of offenders of whatever sort; but they have every right to expect that the laws shall be enforced without favor and that they shall not be singled out and made the "goats."

Periodical arrests of automobilists, however, will not wholly serve the end in view. If they are not over-regulated, certainly they are not under-regulated, but that other persons and other things that use the highways are greatly under-regulated does not admit of argument, and until the fact is recognized by the authorities the maximum of earthly safety will not be realized.

The small boy, the sprinkling cart and the horse driver must all receive attention. If boys must play base ball, foot ball, hockey and other games on the public streets, and must use them as skating rinks—for which purpose they never were designed—surely when the youngsters deliberately place themselves in the way of automobiles, or when roller skaters "hitch on" behind them and perform similar stunts, it is not asking too much that they be "shooed" away, or warned or admonished by the police. But can anyone recall when a policeman has attempted even that mild regulation, which of itself would reduce the peril and thereby the number of accidents?

As for the sprinkling cart, the danger that it invites has rarely, if ever, been remarked, and yet the danger is very real and often present. No vehicle shod with rubber tires is safe on a smooth and wetted surface; not even the most skillful control and the most powerful brakes will render it safe. Indeed, applying the brake is in itself the element of greatest danger and yet, times without number, it must be done. The wonder is, when the fearful skidding results, that serious accidents are not more numerous. And yet the sprinkler is permitted to ply his vocation and streets are washed by city authorities at all hours and despite whatever may be the condition of traffic. Even congested Broadway often is sprinkled when traffic is at its height, and what is true of Broadway is true of many streets in many places.

The unlighted horse-drawn vehicle is with us every night in the year, but so keen are the eyes of the police for unlighted motor cars that the other offender is rarely, if ever, seen; and yet it is no small element of danger, and one akin to the too numerous sleeping truck driver who permits his horses to make their own way. He, too, is seldom, if ever, disturbed by so much as the lifting of a finger of the man clothed with the brass buttons of authority.

Far more numerous, however, is the driver of the horse-drawn vehicle who turns corners or who cuts diagonally across streets without regard for approaching traffic, and, indeed, without regard for anything—not even himself. He is the sort of man who will turn abruptly from left to right without so much as a glance behind or the raising of a warning hand. He is to be seen everywhere, every day, and the number of accidents for which he has been responsible, to say nothing of the even greater number of narrow escapes, is beyond reckoning. Of all "full grown" road evils he is the worst, as nearly every motorist will testify. Yet is he ever raided or arrested or even warned by the police?

Everyone knows the answer, and while he is permitted to roam the highways without let or hindrance, and the small boy and the sprinkling cart are similarly permitted to add their shares to the common danger, the public highways will never be as safe as might be.

Regulation is wise and proper and, if arrests are necessary to regulation, raids on automobilists may be worth all they cost: but until the authorities regulate the other evils the slogan "Safety First" will remain largely a mockery and the authorities themselves will be in part responsible for many of the lives that are lost and many of the limbs that are broken.

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REGINA OPPOSES DELIVERY SUPERVISION'S BANKRUPTCY

Denies Insolvency and Claims Move Was Taken to "Hinder and Defraud"—Charges Against American Taximeter Company.

When the Delivery Supervision Co., of New York City, was made the object of a petition in bankruptcy a month ago, with the American Taximeter Co. the principal creditor, it was supposed that it was no more than an act of the latter to help its protege to retire gracefully; but a different light was thrown upon the situation this week when the Regina Co., of Rahway, N. J., entered the United States District Court for the Southern District of New York with a demand that the bankruptcy proceedings be stopped and that the American Taximeter Co. be enjoined from taking further part in the matter.

The Regina Co. made meters for the Delivery Supervision Co. and claims the bankruptcy action was instituted for the purpose of "hindering, delaying and defrauding" the Rahway concern in its manufacturing contracts with the Delivery company. It is alleged that the American Taximeter Co. is sponsor for the debts of the Delivery company and that this has its part in the matter.

The Regina company claims it would realize $70,000 profits on the contracts in the future and asks that matters be so adjusted that it can continue this business. It denies that the Delivery Supervision Co. is insolvent and charges that the receiver, Wm. M. Lybrand, is a copartner of the Delivery's treasurer, R. H. Montgomery.

The Delivery Supervision Co. succeeded to the business of the International Delivery Supervision Co. January 1, 1913, and in April the American Taximeter Co. assumed a majority control. For this purpose it is charged it entered into a contract with Walter H. Seely, of Suffern, N. Y., and Edward A. Henkle, of Rydal, Jenkinstown, Pa., whereby they put their majority holdings into a five-year voting trust, the officers during the trust to be: President, T. Ducasse; vice-president and general manager, Seely; treasurer, Montgomery. The voting trust was to be controlled by the taximeter company.

Prior to the entry of the latter the Regina Co. claims it was a creditor of the delivery company to the extent of $21,508.19 and that there was an additional credit of $13,044.87. At this time the taximeter company, it is claimed, agreed to back the Delivery-Regina contracts if they were made for two instead of for five years, and the minimum of 300 meters a month waived. This was agreed to.

The Regina Co. states that at the date of the bankruptcy petition it was owed $51,016.47 by the Delivery company and that if the bankruptcy goes through it will be a staggering blow. It is further alleged that the Knickerbocker Trust Co. holds a mortgage on the Delivery company's property and that delay is sought in order that this may be foreclosed. The suit is against the American Taximeter, Seely and Kenkle



* Indicates Sanction by A. A. A.

Dec. 3-4-5, New York City—Motor Dealers' Contest Association's 500-mile reliability contest.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Dec. 17-20, Davenport, Ia.—Tri-City Auto Trades Association's show in Armory Hall.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan. 17-24, Pittsburgh, Pa.—Automobile Dealers' Association's annual show.

Jan 24-31, Chicago, Ill. — Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 17-24, Detroit, Mich.—Automobile Dealers' Association's show in the Ford Building.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Kalamazoo, Mich.—Kalamazoo Automobile Dealers' Association's fifth annual show in the State Armory.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 4-7, St. Joseph, Mo.—St. Joseph Automobile Show Association's show.

Feb. 9-14, Seattle, Wash.—Annual show in State Armory.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 22-March 1, Hartford, Conn.—Automobile Dealers' Association's show in Park Casino.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Association's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

Used Car Concern Owes 'Phone Money.

Judgment for $137.19 was filed this week in the New York county clerk's office against the Cooperative Used Car Co. by the New York Telephone Co. The Cooperative formerly traded in used cars at a Broadway location.

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THREE DRIVERS PENALIZED IN NEW YORK RELIABILITY

Eight of Eleven Starters Finish First Day with Clean Scores—Lamp Bulb Costs Six Demerits—Four Drivers Arrested.

In a lifting morning haze, the 11 contesting cars in the Motor Dealers' Contest Association's three-day 500-mile reliability tour slid away from the starting line in front of the Manhattan Automobile Club in 62d street, near Broadway, New York City, at 7 o'clock on Tuesday morning, 3d inst., and before any of them, including the five cars that carried the officials, the confetti throwers and the newspaper men recrossed the starting line the same evening only eight unsullied scores remained. Those who started, together with their scores at the end of the first day, are as follows:

TOURING CARS—UNDER 230 INCHES.

No.	Driver and car.	Penalty.
1	E. Woodruff, Buick	0
2	A. A. Guilford, Buick	0

RUNABOUTS—UNDER 230 INCHES.

3	C. Jones, Buick	0
4	J. D. Coote, Buick	0

TOURING CARS—231-300 INCHES

5	J. Brietenbach, Chandler	0
6	B. Bornish, Oakland	1

TOURING CARS—OVER 301 INCHES.

7	T. Speer, Oldsmobile	0
8	E. Cordier, De Dion	9
9	S. Casey, National	0
10	A. W. Harman, Hudson	6
11	W. Smith, Buick	0

The three penalties that were meted out are for troubles that might occur to any car almost at any time and none is of really serious consequence. Thus, for instance, one of the brakes on Bornish's Oakland seized; the driver freed it in one minute with one blow of a hammer, but the work cost him one point penalty. Harman's trouble was of even less consequence—a burned-out tail lamp electric light bulb—but it cost him six points. Cordier in the De Dion, which, by the way, has eight cylinders and, curiously enough, carries the number "8" as a distinguishing mark, if one is needed, had more trouble than any one else. Three times dirt clogged his carburetter and three times it had to be cleaned out, the work costing the driver his nine points penalty.

During the day, 174.9 miles were covered, all of them over the smooth, rolling roads of Long Island—probably a good deal smoother than those that will be encountered on either of the subsequent days of the run—with the noonday stop and luncheon rest at Riverhead, L. I., and the finish line the same as the starting line. From the starting point, the route led through Flushing, Roslyn, East Norwich, Huntington, Smithtown, Port Jefferson and Wading River to Riverhead, the whole journey being made via the north short of the island. On the return journey the south shore was covered, the roads leading through Quogue, Eastport, East Moriches, Bellport, Patchogue, Sayville, Bayshore, Merrick, Rockville Center, Valley Stream and Jamaica to the finish line.

Although the roads were smooth and the "going mighty good," no one took any chances of getting into controls later than their respective specified times. Almost before the leaders were fairly out of the Metropolitan traffic area, toes pressed throttle levers and the pace commenced to increase. And by the time the cars were well out on Long Island the pace became altogether too swift for the ordinarily slumbering consciences of Long Island constables. Suffice it to say that no fewer than four drivers were stopped by the long arm of the law and charged with exceeding the legal speed limit, before the noon stop was reached. And one driver was unlucky enough, or careless enough, to be arrested both going and coming. Despite the arrests, however, all of the drivers checked into both noon and night controls on time—all of them got in considerably ahead of time, as a matter of fact.

Needless to point out, none of the drivers attempted to adhere to the schedule of speeds laid down in the book of rules; the rules do not specify the maximum speed permissable. According to the rules, which were drawn up principally by David Beecroft, who, with Geo. H. Robertson and E. Lascaris, form the Contest Committee of the association, the running schedule was laid down according to the piston displacement of the cars, which is one of the principal differences between the governing rules of the run and any other reliability contest rules, and represents a radical departure in such matters. The specific minimum speeds follow: Under 230 inches, 16 miles an hour; 231-330 inches, 18 miles an hour; over 300 inches, 20 miles an hour.

Classification of the cars in this way, however, is not the only radical feature of the rules, as was made plain last week in Motor World. For in addition to the usual penalties for time lost on the road and for work done, the rules also provide penalties for even the slightest derangement in any part of any car and cover, for the first time, every item of equipment including all the accessories. In this respect, it is worthy of more than passing note that though it was expected that cars would be entered carrying the equipment with which they are sold, nothing in the rules makes the carrying of the equipment compulsory. None of the Buicks have tops or windshields, these having been removed prior to the preliminary examination. So that their removal might not be construed as an unfair advantage, Beecroft ruled that others might follow suit if they so desired. None did so, however, though the De Dion has neither of these items of equipment.

Prior to the start, all 11 cars were garaged on the sixth floor of the Mitchell-Edmonston garage in 62d street, where the technical committee went over each with a fine-toothed comb, measured springs and axles, tested batteries and starters and generators and sealed hoods, radiator caps and gasolene tanks. The seals were expected to be intact when the cars pulled into the garage at the finish of the day's run to be placed under lock and key until the start the next morning. As each car checked in, the driver was permitted 45 minutes in which to replenish oil, gasolene and water before the seals again were placed on his car.

Today (Thursday) will see the finish of the second day's section of the run—a 178-mile jaunt to New Haven, Conn., and return, over the Boston Post Road going out and back by way of Danbury, Conn. The principal towns through which the route leads are New Rochelle, Mamaroneck, Portchester, Stamford, Darien, Norwalk, Fairfield, Stratford and Milford to New Haven. On the way back, the route leads through Derby, Huntington, Dodgingtown, Danbury, Wilton and thence over the same roads as those traversed on the outbound journey.

Friday's run is the shortest of the three and leads through Yonkers and Hastings, where a detour is taken to include Briarcliffe, Croton Lake and Yorktown, where the main road to Poughkeepsie again is picked up. Coming back, the route leads straight on past Peekskill to Croton, Harmon, Ossining, Tarrytown, Irvington and Dobbs Ferry and thence in to the starting point over the same roads as those covered going out.

Succeeding the checking-in process at the end of the third day's run, the cars again will be subjected to a rigid examination at the hands and eyes and measuring instruments of the technical committee, and all loose bolts, lost grease cups and every other defect, great or small, noted down on score cards for comparison with the cards made in the preliminary examination. Discrepancies will draw forth penalties. After the technical examination, the outdoor operative tests will be completed and more penalties meted out to the drivers of cars which fail to come up to the requirements of the rules. The tests include engine starters and batteries, motor, running gear, clutch and brakes.

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WIDE-AWAKE MERCHANDISING In the Motor Trade

SELLING THE "UNSALABLE" CAR

Factory Salesman Showed Dealer His Hard Luck Was Largely Imaginative—Sold Car Where Dealer Had Sold None in Two Months.

The salesman for a popular priced line of cars stepped into the store of a dealer in a small Middle West town where two months ago he had sold two cars to the proprietor. Before he had crossed the threshold he saw the two cars he had shipped the dealer, standing exactly where they had been placed when they first came into the store. After waiting patiently for a few moments, the salesman strolled out to the garage at the back, where he found the proprietor at work, covered with dirt and grime.

"I see you still have the two cars I shipped you two months ago," remarked the salesman. "Yes, they're still here," echoed the dealer. "What's the trouble?" ventured the salesman. "Oh, I don't know; people 'round here don't seem to take to the car, that's all, I guess; I've tried hard, but I can't sell 'em."

Salesman Gave a Real Demonstration.

While the salesman was turning this over in his mind, the two men were making their way toward the salesroom. As luck would have it, in came a man and his wife. "Let me wait on them," whispered the salesman to the dealer. "Sure! Go to it!" answered the dealer, disappearing into his small office.

Leaving his hat on the desk, the salesman moved swiftly to the front of the store, where he greeted the pair with a cheery "Good morning. I am glad to see you are thinking of buying a car," he added, "because we have something here that I think you will like much better than anything else you have seen."

Excusing himself for a minute, he brought the lady a chair and placed it right in front of the model he intended selling to them.

Then he warmed to his selling talk, explaining things in language that the lady clearly understood and emphasizing the various points he thought would interest her by practical demonstrations. He pointed out the luxury of the tonneau, the roominess, the style, the upholstery, etc.; showed her how easy it was to operate the gear shift; asked her to take a seat by the steering wheel and see how easily the brake pedals worked, explained all the points necessary for operation. After half an hour spent this way—the husband meanwhile scrutinizing every feature carefully—the salesman turned to the wife and said: "I am somewhat of a mind reader; I believe I know what you are thinking about. You are wondering what fun it would be if you could learn to drive that car and use it during the afternoon and then drive down and call at the office for your husband at night."

The Move that Pushed the Sale Over.

"You haven't hit it exactly, but do you really think I could learn to drive that car? How long would it take?"

"Madam," responded the salesman, "in fifteen minutes this car will be all ready and I will guarantee to teach you this afternoon, so that by nightfall you can drive it yourself."

Some way or other the salesman had struck exactly the right note, and in fifteen minutes he presented the dealer with a signed order and a check for the car, with instructions to have the machine ready for the road by noon.

You can call it luck, nerve, or anything you please, but in the last analysis it was salesmanship—and it was a revelation for the dealer who took it all in. Seeing how easily it was done—he screwed up courage sufficiently to give shipping instructions for two more cars—and thus a quick-witted salesman turned what looked like a most discouraging situation into a glorious victory.

MAKING GOODS MOVE DURING PERIODS OF UNUSUAL DULLNESS

When times are dull, then is when the real merchandiser is conspicuous by his activity. He realizes that the goods on the shelves are worthless to him unless he can turn them into cash. Bills must be paid and credit preserved intact. How to get the people to buy when they do not seem to feel like buying; how to get the cash back so that goods coming in can be paid for promptly—those are problems that require thought and action.

A Western dealer in supplies found on October 20 that his total sales for the month were 45 per cent. less than a year ago. To meet the situation by admitting that things were dull anyway was not his style. He wanted to meet, and if possible beat, last year's record. He had to do some tall figuring. But he solved the problem. His store needed some remodeling. He decided to have it done at once. He got busy and let the contracts and had the work started within two days. Then he put up big signs reading "Remodeling Sale," exactly the same as he had seen done in other businesses. He advertised in the local papers, using moderate space but featuring a few reductions, and boosted the sale for all he was worth. The sale lasted the better part of two weeks.

At the end of that time he had come within 5 per cent. of what his previous year's record had been. Of course, he did not make so much money on each article as if he had sold it at regular list price; but he moved the goods, and cash was what he needed more than goods. Incidentally he taught himself a lesson—namely, that there were numberless ideas in the way of special sales that he could profitably adopt from other lines of business.

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NO FEAR IN REAL SALESMAN

Dread of "Difficult" Men and Habit of Imagining Possible Failure Harms Sales, Says Successful Man—How He Acquired Courage.

"If you would be a real salesman and carry home the bacon you must banish fear," said a salesman who is noted for his brilliant work.

"I have seen more men fall down from fear than from any other cause. Some men fear the 'boss' to begin with; that puts a damper on their enthusiasm; everything they do is tinged with this fear. Nine cases out of ten there is no actual ground for it. If they would look the matter squarely in the face they would see how very foolish they are.

Losing "Pep" Through Long Waits.

"Again, I have known a man to lose all his 'pep' and confidence while waiting outside an office for an interview. His imagination has run riot and pictured all sorts of unfavorable conditions. The result is that when he does get the interview he is not himself and he does not inspire that feeling of sureness and confidence that a salesman must beget to win the order.

"I could cite you case after case where I know I lost sales myself in the early days simply because this demon fear possessed me. One day someone handed me a book he had been reading. It was James Lane Allen's 'As a Man Thinketh.' I read that book over and over again till I knew almost every word by heart. I began to see a light. I got fresh courage. I kept renewing it by going back to the book and by getting hold of others along the same line. Frankly, it changed my whole attitude mentally; and it has paid me in dollars and cents. But that is only the least part of it. The real thing is that I have managed to develop a sort of optimistic courage that makes me really enjoy every moment of my work. I used to dread calling on a new customer. I delight in it now. If a man was crusty and stand-offish I used to avoid him. Today I cultivate him, look for his good qualities and make myself as pleasant as I know how. I used to hate to take up matters with the 'boss'; I feared his criticism; today we are like brothers. I talk just as frankly and fearlessly to him as I would to my own brother, and he likes it. The other day he told a friend of mine that he liked me and respected me because I was one of the few men of his staff who talked right up to him and wouldn't let him do the wrong thing if he wanted to.

"There is never any real reason for fear and I would urge every salesman to banish it completely. Any time you fear anything go right up to it, metaphorically speaking, grab hold of it and turn it over and look at it. You will find that there is absolutely nothing to it."

HONOR AMONG SALESMEN AND THE LACK OF IT; AN INSTANCE

While waiting outside the office for a big dealer to see him, a certain accessory jobber's salesman encountered another salesman. They had never met before, but in a few moments were in close conversation. The accessory salesman kept quiet about his business and learned that the other man was selling hood covers. He inquired his price and got all the information he could. Things had just reached this point when the dealer sent word requesting the accessory man to come in. After writing up an order, the salesman was leaving when the dealer turned to him and said: "By the way, do you sell hood covers?" "You bet, we do," said the salesman, "but frankly, while I would like to sell you I prefer not to quote you any prices. There is a gentleman outside who has come to see you specially on hood covers. He did not know who I was, but he has given me his prices and all information about his stuff. That information gives me an unfair advantage over him. It was gained accidentally and I don't wish to avail myself of it."

"As you like," said the dealer. That appeared to be the end of it, but it wasn't. A month later the salesman was making his usual round and once more called on the big dealer around whom the story is centered. "What about those hood covers you sell? Will you quote me on them today?" asked the dealer. "That man you were so particular about protecting came in after you did and didn't do a thing but rip your house up the back. He went for your house right and left and he didn't spare any of your competitors. When he got through I told him we would not do business with him under any circumstances. If your prices are right you can have a nice order for hood covers." The salesman did not go away empty handed.

MOTTOS THAT GIVE A TOUCH OF DIFFERENCE TO LETTERS

Once in a while someone hits upon a motto which is particularly good and hitches it onto the bottom of his business letter paper; when the motto is just right it causes a trace of a smile or at least a deviation in thought from the sometimes dull routine of reading the mail.

The R-D Motor Parts Co., of 713 Ford building, Detroit, evidently intended to disseminate an uplift thought when it used a little red ink on the bottom of its business paper, saying:

Stand up, the Ceiling is High.

In New Rochelle, N. Y., G. O. Reynolds, Inc., aimed to describe his business well when he pinned this motto on his letters:

The Garage that is Different—Not Indifferent.

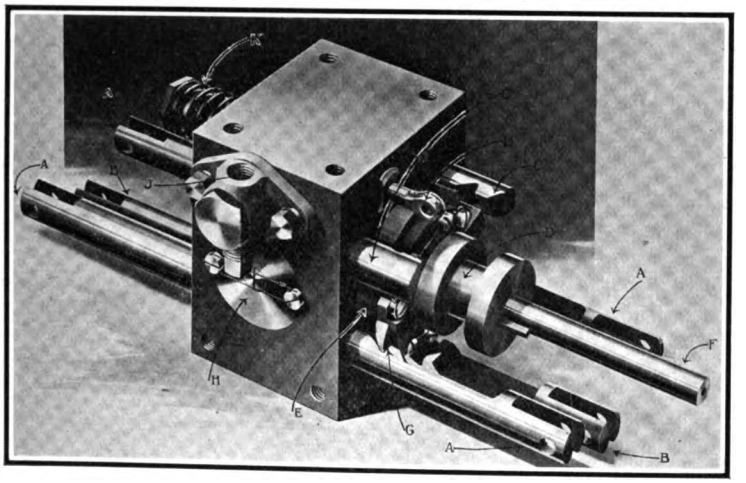
No matter what other attribute attaches to this pair, they at least indicate that the man behind the letter has originality.

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GRAY PNEUMATIC SHIFT UNDERGOES REFINEMENT

Simplicity and Positiveness Increased Though Working Principle Remains Unchanged—Operation Described in Detail.

Marking an epoch in automobile construction, the formal adoption of the Gray pneumatic gear shifting and engine starting system by the McFarlan Motor Co. for incorporation in some of its models, has served to draw attention anew to the Gray apparatus, first mention of which was made in Motor World under date of May 22 last. Since then, however, a number of refinements and improvements have been made in the mechanism by way of making it still simpler and rendering its action still more positive. In its present improved form, the apparatus does not differ in principal from the form in which it first made its appearance, the changes that have been made being more or less minor in nature.



GRAY PNEUMATIC SHIFT COMPLETE SHOWING OPERATING MECHANISM

It is one of the advantages of the Gray system, which is produced and marketed by the Gray Pnaumatic Gear Shift Co., of Chicago, Ill., that it may be readily placed on existing cars and, unlike other systems which are calculated to ease the operator's burden by taking out of his hands the actual work of shifting gears, does not require to be built into place at the factory of the car builder. Installation of the compressor and motor starter, one connection to the air supply, a rod or cable to the clutch pedal and a connection with the selector mechanism at the top of the steering wheel make the installation complete.

In its entirety, the Gray system consists of three units, of which the air compressor probably is the most important, for upon it the operation of the other two depends. The compressor is a double-acting two-cylinder pump and is built integral with the starting motor and mounted at the front extension of the crankshaft, preferably in front of the radiator, where it is instantly "getatable" and where a free circulation of air assists in keeping down its temperature under long pumping spells. Air is stored in a steel container mounted at any convenient place on the chassis and the pressure automatically is maintained at any degree up to 300 pounds. The engine starting motor is of the reciprocating type and is designed to "spin" the average sized engine at approximately 300 revolutions a minute. Auxiliary apparatus, consisting of gauge, compressor control, starter valve, shut-off and connection for tire inflation, is mounted on a plate on the dash.

The gear shifting apparatus itself is shown by the accompanying illustration which makes plain its relative smallness, its external simplicity and the compactness of the mechanism. The two main shifting racks which are attached to the gear shifting rods of the gearset are designated AA; these racks are forced forward by means of the selector latch (G) which is operated by a double-acting piston working in a cylinder bored out of the center of the main casting and make the two forward shifts on the ordinary three-speed forward and reverse gearset. The two backward shifts are made by engaging the selector latch with the idler shifting racks (CC) which, when forced forward by the admission of air into the cylinder, drive the main shifting racks backward by means of a pinion gear protected and enclosed by the cover plate (H).

The selector shaft (F) is connected to the selector quadrant which is mounted at the top of the steering column above the steering wheel. The desired gear is selected by turning the selector quadrant until the latch (G) engages the rack operating the particular gear selected. Air is admitted to the intake (J) and enters the cylinder through a valve operated by cams on the distributing valve (K). This sliding valve is drawn forward by depressing the clutch pedal to which it is attached by means of either a rod or a cable at the point marked (L). A half depression of the clutch pedal —enough to disengage the clutch—admits air to the selector end of the cylinder and at the instant the clutch is fully disengaged forces all gears to the neutral by means of the selector disk (E).

Both shifter racks and idler racks are made with a shoulder which engages the selector disk on the return movement of the piston and thus all gears are disengaged. The selector disk (E) is attached to the outer shouldered end of the piston rod by means of a threaded locking collar so that it can be rotated freely by the selector shaft (F) to which it is keyed and on which it slides in consonance with the movement of the piston.

The full depression of the clutch pedal exhausts the air and at the same time admits air into the outer end of the cylinder, forcing forward the selector mechanism with the particular shifting or idler rack engaged by the selector latch. In the illustration the position of the racks indicates that all the gears are in neutral with the selector latch (G) engaged in one of the shifter racks ready for a shift.

When the shifter is to be used for four-speed gears, the shifting rack (B) is used and no idler rack is necessary, as the rack operates in only one direction in addition to the neutral movement controlled by the selector disk (E). So that the gears can be shifted by hand in the good old way in the event of derangement of the system, the collar (D) is provided and into it a supplementary lever, to be carried ordinarily in the seclusion of the tool kit for emergency, is fitted.

Half Taxes for Four-Year-Old Cars.

In Iowa a car which has been in service four years need pay but half the regular State automobile license tax, according to an opinion handed down last week by Attorney General George Cosson. He ruled that the tax on cars is the same for the first four years, but thereafter is but half the original sum.

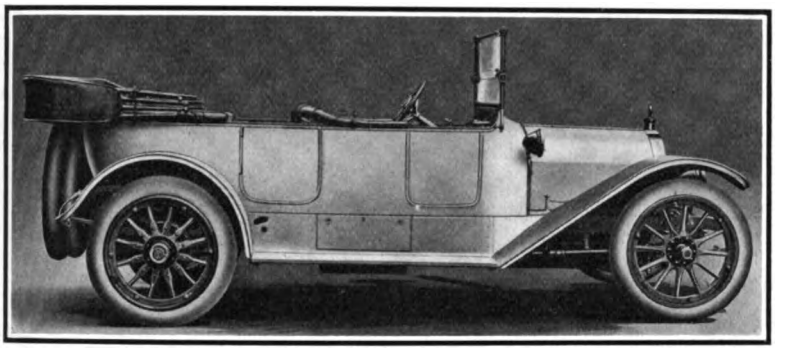
A more or less similar arrangement is arrived at in the case of cars which have been used part of the four years outside of Iowa. In case a car is not in service it is subject to a personal tax but not to the State automobile tax.

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BRACE OF MERCER MODELS MAKES LINE MORE COMPLETE

Mechanical Changes Conspicuously Absent—Speed Model Practically Unaltered Since 1910—Mechanical Details of Motors.

Making extensive mechanical changes in its cars long ago ceased to be a practice with the Mercer Automobile Co., of Trenton, N. J. On the contrary, the Mercer cars have become standardized to an unusual degree, and it is quite in keeping with this



MERCER TOURING MODEL SHOWING ITS "CLEANNESS" OF LINE

state of affairs that in making its line of cars longer by two models the Mercer people have not departed from the practices that have given such excellent results in the past. Moreover, the two existing models have been retained exactly as they are—a "close-coupled" five-passenger touring car with a wheelbase of 118 inches and a raceabout or high-speed stock car with a wheelbase of 108 inches. This latter model was introduced in 1910 and since then has been changed but little. Perhaps its most prominent characteristic is its speed; it is guaranteed to cover a mile in 51 seconds.

The two new models can be called new only insofar as wheelbase lengths and bodies are concerned. One is a five-passenger touring car having a longer wheelbase than the older touring car—124 inches—and the same motor. The other is a runabout mounted on the same 118-inch chassis as that of the old touring car, and is designed to meet the demand for a big, comfortable machine of its type, with an easy action on all sorts of roads. In all four machines the motors are much alike. In fact, the only substantial difference is that in the raceabout the bore and stroke are 4⅜ and 5 inches, respectively, while in all the other models the corresponding measurements are 4½ and 5 inches. According to the formula rating the raceabout motor is of 30.6 horsepower and the larger engine 32.4 horsepower. On the dynamometer, however, each motor is required to develop 58 horsepower at a speed of 1,700 revolutions per minute.

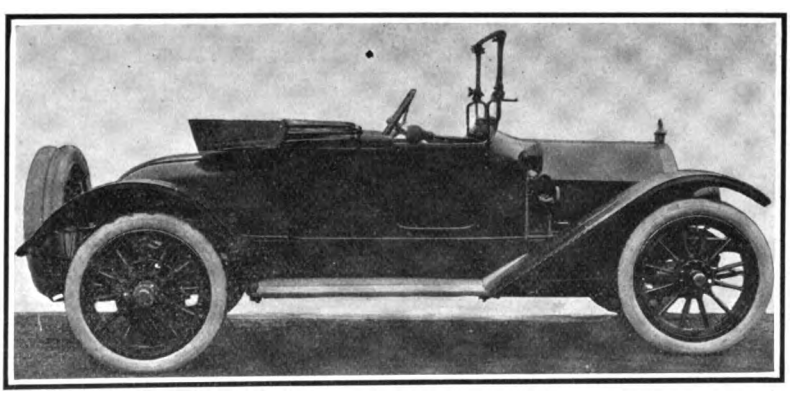
The high power of the motor is, of course, a governing factor in the speed of the raceabout and the all-round ability of the other models, and most of the credit is given by the Mercer engineers to the valves, which are no less than 2¼ inches in diameter with a lift of 7/16 inch. Of course, other features must be in keeping with the valves, and the performance of the motors indicates quite clearly that such is the case. The valves are of Tungsten steel, which admirably resists the highest cylinder temperatures.

All the motors are of similar general design. The cylinders have T-heads with the intake valves on the right, and are cast in pairs with integral jackets, and the bores are finished in the modern way—by grinding. Pistons are of the same material as the cylinders, and depart from conventional practice in that but two rings are fitted, and they are of the concentric type peined on the inside to give an even tension at all points. The piston pins are clamped in the connecting rods and have their bearings in the piston bosses. Pistons and rods are weighed and balanced, so that there will be no variation in the weights of the reciprocating parts in a motor. The manufacturers claim that much of the lack of vibration of the Mercer motors is due to the fact that the connecting rods are unusually long and that the cylinders are not offset.

The crankshaft runs in three bronze-backed bearings filled with special alloyed bearing babbit. The crankshaft is 2 inches in diameter; the bearings are 3½, 3 and 4 inches long, respectively, the short bearing being in the middle and the longest at the flywheel end. A shaft balancing machine is employed to get the shafts in perfect running balance at speeds up to 1,800 revolutions per minute. Camshafts are made with integral cams and though housed in the crankcase are easily removed; the front bearings are annular balls and the other bearings plain. The shaft gears are spiral, of bronze, 1¼-inch face.

Lubrication is by pressure feed and splash, the splash level being maintained constant by a gear-driven pump located in the oil reservoir. The pump has but one moving part. The oil pumped passes through a sight feed on the dash. Overflow dams in the crankcase keep the splash level at the proper point. The capacity of the oil reservoir is 1.75 gallons, and an indicator shows the level at all times. A Flechter carburetter is fitted.

Ignition is effected by a Z-R-4 independent two-spark Bosch magneto of the enclosed waterproof type; there are two sets of plugs, one set over the intake valves and the other over the exhaust valves, and sparks are produced simultaneously in the two plugs of a cylinder. A two-point switch permits the use of either one or two sets, as may be desired. The pump, electric generator and fan all are operated from the same shaft system and any one may be dismounted without interfering with the others.



NEWEST MERCER ROADSTER WITH HOOD, AND REAR DECK "LINED UP"

The gearset provides four speeds selectively controlled, and is hung in a sub-frame by the upper part of the case, the arrangement being such that the lower part of the case can be removed without disturbing the alignment of the gearset. Annular ball bearings are fitted throughout the transmission system. The clutch has no less

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than 44 steel disks, is housed in a casing integral with the gearcase, and runs in oil.

Final drive is by shaft to the full-floating rear axle. The axle housing is of pressed steel and the gears are readily accessible through an inspection opening. The pressed steel frame, which has a narrowed front, has a rear kick-up of 3¼ inches, which helps greatly in bringing down the center of gravity. In the matter of springs there is a little difference between the cars, the raceabout having semi-elliptics all around and the other cars semi-elliptics in front and three-quarter elliptics in the rear.

Right-hand control is standard on all models. In all models four-inch tires are fitted all round, with the exception of the new touring car, which has 4½-inch tires in the rear and 4-inch front. Electric lighting and starting systems are installed in all the cars except the raceabout.

Harry Knox Patents Sleeve Valve Motor.

Whether or not patent No. 1,075,580, issued to Harry A. Knox on October 14, 1913, is to have any significance as regards the motor of the Lyons-Knight car, built by the Lyons Atlas Co., of Indianapolis, Ind., remains to be seen. At any rate, it would appear from the wording of the patent that Knox, who is manager of the Atlas Lyons automobile department, considers the device an improvement on the double sleeve valve system of the Knight engine that the company is licensed to build.

Briefly, the patent covers a motor which retains the inner sleeve of the Knight type, but discards the outer sleeve and in its place puts a valve "concavo-convex in cross section, the concave part of which bears against the outer convex surface of the valve sleeve, said bearing surface having the same radius," while the outer surface of the new valve is of much shorter radius, forming, in fact, approximately a half-circle. This valve reciprocates in a groove which extends vertically the entire length of the cylinder and is actuated by an eccentric, just as is the sleeve valve.

According to the patent, the object of the invention is to reduce the friction occasioned by the lateral thrust of the piston against the sleeves and to reduce the amount of dead gas trapped in the ports and carried back into the combustion chamber at each intake stroke. This is believed to be accomplished by the combination of a single sleeve with a single port and the new slide-valve with two ports.

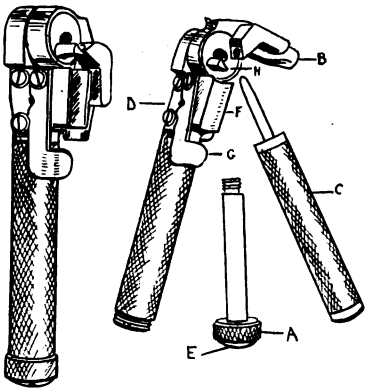
Little Things that Help Tires.

One of the little things that ought to be done but usually is neglected is the sealing up of the hole in a casing after a tire has been punctured. The hole in the shoe permits the entrance of moisture and grit.

TOOL TO FORM TERMINALS IS BROUGHT OUT BY BOSCH

Ingenious Device Which Strips Wires, Fits a Brass Tube and Forms Looped End—For Low and High Tension Wires.

As a chain is no stronger than its weakest link, so is an ignition system no more reliable than its terminals. And the significance of this is that if the terminals let go the rest of the ignition system may be the best in the world or the worst—it will make no difference so far as igniting the vapor is concerned. Apropos of which the Bosch Magneto Co. has been working on the terminal question for years, and now makes the statement that it has solved the problem



BOSCH TERMINAL TOOL

of producing a terminal for stranded conductors that not only is entirely satisfactory as a terminal, but is easy to make and withal comparatively cheap.

Briefly, the Bosch method consists of stripping the end of the cable, slipping a brass tube over the bare wire and pushing it into the insulation, and then bending the tube and the enclosed wire into a loop, at the same time slightly flattening the tube so that the wire is nipped and securely held. For cables with heavy insulation the little tubes are made with beveled edges at one end so as to enter the insulation easily, while for cables with insulation that does not permit this the end of the tube is expanded to form a ferrule to fit snugly over the insulation. The embedded end of the tube or the ferrule, as the case may be, reenforces the cable at what otherwise would be a weak point and prevents the too common breakage that results from bending and vibration at this place.

While it is possible to strip a cable with a jackknife and form the loop with the aid of a pair of round-nosed pliers, the Bosch people do not believe this to be an entirely satisfactory method, and therefore they have designed a special tool, shown in the accompanying illustration both folded for carrying and open for use. The tool is about five inches long and so is readily carried in the pocket. When the knurled button (A) is unscrewed from the handle it carries with it an extension which is screwed into a tapped hole in the second leg B of the tool. The handle also gives up a pin (C) which is used in the loop-forming operation. The stripper (D) neatly and expeditiously takes the insulation off the cable, which has been marked in a gauge formed by the groove (F). Then the tube is slipped over the wire and the end inserted in a hole (E) in the extension handle, and pressure applied until the tube has gone as far into the insulation as it should—which is easily determined because when the proper point is reached it cannot go any further.

The last operation consists in placing the cable again in the groove (F) with the tube pointing upward, as the tool stands in the picture, and inserting the pin in the end of the part C in the hole in the middle of the joint of the tool. This necessitates bending the tube to one side, which forms the first part of the loop. The work is completed by swinging the handles, which have been separated as widely as they will go, until they are closed as far as possible. This bends the terminal into a perfect loop and simultaneously gives it the requisite flattening—just enough and no more. The terminal is electrically and mechanically perfect without soldering and the attendant danger of corrosion from acid, and is so small that connections can be made close together without danger of short-circuiting. To cap the climax, the terminal is a permanent thing—one more part of the equipment of the car that may safely be forgotten.

A. C. A. to Test Moline-Knight Motor.

The mettle of the latest member of the sleeve-valve family — the Moline-Knight motor—will be tried out in a non-stop run conducted by the Automobile Club of America in its testing laboratory in New York. It is the intention to run the engine continuously for 336 hours, or 14 days, under the official rules of the A. C. A. The test will be commenced about December 15. The motor, which was described in detail in Motor World for November 20, has a bore and stroke of 4 and 6 inches, respectively, and a formula rating of 22.6 horsepower. It differs from the majority of Knight motors in that its four cylinders are cast in a single block, and cooling is effected by thermo-siphon or gravity circulation of the water.

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KEEPING THE PROSPECT'S MIND ON ONE THING

Reilly's Protege Tries to Talk About Three Cars at the Same Time and is Criticized—Concentration on One Car Helps Buyer and Salesman, Reilly Says—Finding Which One to Talk About.

Tommy Trumbull wasn't so bad for a beginner. He left school with a determination to be a salesman and also with a semi-determination to make his start in Reilly's salesrooms, and his determined attitude had much to do with his progress.

Were he a captain of industry his determination to succeed would have been held up as an example to the youth of the land, but since he was only a youth who had yet to turn the world into a conflagration he had not attracted much attention; however, he had persistently and systematically attracted the attention of Reilly until he had been admitted as a neophyte at the shrine of the great god Automobile Selling. Also, Tommy had ideas as to what he was going to do to that god.



"WHAT YOU DID WAS TALK ABOUT THREE DIFFERENT CARS AT THE SAME TIME"

Danger Signal to Prevent Losing Sale.

This particular morning Tommy had been permitted to test his ability on a prospect; the prospect was a perfectly good one, so far as anyone knew, and if the amateur salesman "queered the game" it meant a nice commission lost, wherefore Reilly, according to a prearranged plan, walked across the floor at a critical moment, was introduced by Tommy and the latter was permitted to make a graceful getaway.

"Well," said Tommy, when the prospect had gone and Reilly had returned to the office, "how did I do? Also, what did I do?"

Reilly smiled at the lad's eagerness to get whatever criticism was coming.

"I might also add," supplied Tommy, "what didn't I do?"

"You made a fair beginning, Tommy, and I guess you'll get along all right if nothing happens. But I suppose you are anxious to know why I flashed the danger signal and helped you out; is that it?"

"I am just a bit curious on that point," smiled Tommy. "The minute you showed up I knew something wasn't just right and ever since I've been in here waiting for you to come back I've been trying to think what was the matter with my work."

"You scattered your fire; that's the main thing this morning. You used too many kinds of shot on the same bird."

"Now I am guessing. I wouldn't wonder but that I have a lot to learn."

"Everybody's got a lot to learn—although some of them don't know it—but what you did this morning was to talk about three different cars to one man at the same time."

"But isn't that right? He might want any one of the three, mightn't he?"

Too Many Choices Delays Selection.

"Yes, he might, but talking about all three at the same time isn't the way to get him to buy some one of the three."

"No? Why not?"

"Because, by doing that you are keeping the man from doing what you want him to do. You want him to decide to buy a car—some one of the three, a runabout, touring car or a limousine—and by juggling the three of them in front of his face all the time he doesn't know which one to grab. He might eventually decide on one of them, but keeping all three in front of him delays his decision. It sort of confuses him and makes it harder for him to decide."

"Well!" exclaimed Tommy. "Now I am guessing! How am I going to know which one to talk about? You say I mustn't talk about all of them at once."

"You have to be a mind reader."

"A mind reader!"

Salesman a Mind Reader, Says Reilly.

"Certainly," Reilly blandly explained. "Didn't you know that all salesmen are mind readers—experts at it, too? You'll get so after a while that you can look at a man and tell how much money he's got and whether he's paid this month's house rent."

"I'm afraid you're kidding me," said Tommy, as he noticed a peculiar smile upon the face of Nellie, who appeared to be very busily engaged in her little cubbyhole office adjoining.

"You have to feel your man out, that's all," replied Reilly. "It may seem a bit difficult at first, but you'll soon see the why and the how of it. Really, what you do is to let your man decide which car he is interested in before you begin your real selling effort. Just how you do it can't be explained in few words and I don't know that I could explain if I used all the words in the dictionary. It's something that comes under the head of instinct to a certain extent and the better you are in that respect the better you will get along.

Not Always Necessary to "Feel" Way.

"Of course, this doesn't always apply. If it is necessary to handle a prospect carefully for fear he will duck and run like a scared rabbit, it is well to feel him out, but in a great many, probably in a majority of cases, you can ask the man point blank what size or style of car he is interested in. Generally, if he wants a car, he will have no hesitation in answering the question and will still remain just as good a prospect."

"Suppose I have found out what he is interested in; isn't there a possibility that he may like to know about the rest of our cars?"

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"There is a possibility, but it is well to overlook it. If you believe you have discovered what particular car of your line the prospect would like it is best to try to sell him that car—not try to sell him one of several. Act just as if you had no other car to sell him and try to make the sale on that one model. If he subsequently develops interest in another style of car you, of course, can't prevent him buying that one, but so long as he is content to stand an argument on the car you believe he wants, keep after him on that.

Inadvisability of Conflicting Lines.

"This morning, for instance, you kept putting in a word here and there for each of the cars, just as if you were afraid the rest of them would feel slighted if you didn't. That didn't permit the man to concentrate his attention on any one car, and a man can best decide to buy when he is helped to concentrate his interest.

"We have only one line of cars and they are medium in price. Some dealers carry several lines and some of them make mistakes in doing so. Messick has three lines—which may be all right, but I doubt it. Two of his lines are much the same in price, and if a prospect comes in to buy a car Messick has to be careful how he handles the situation. If the prospect knows that the two lines are about the same in price and if Messick persists in trying to sell him on one of them the prospect is likely to wonder whether Messick hasn't some motive. And if Messick says one is as good as the other it leaves the prospect confused."

"How about his third line?"

"That isn't so bad," replied Reilly. "It is one station down the scale in price and doesn't conflict with either of the others. Messick would do better, I believe, if he dropped one of the higher-priced cars and stuck to the low- and medium-priced ones. Then he would have an offering for anyone and could concentrate his own efforts. This selecting one car and trying to sell it helps the salesman even more than it does the prospect, for the salesman then can center his energy on one point."

Little Tricks of Other Businesses.

"I'll do that hereafter," agreed Tommy.

"You just keep your eyes open and see how much that is done in all lines of selling. The next time you buy a pair of gloves go to a good store where you are fairly certain of encountering a good salesman and watch him work. He will show you a few gloves, perhaps, but he won't take down all he has in the store if he discovers that you have a particular preference. Once he finds what you fancy he will try to make a sale of that style unless I miss my guess.

"Did you ever wonder whether a life insurance agent had more than one kind of policy? He has—but he doesn't say so. You listen to a warm argument on some particular policy and maybe you take it. He has any number of policies, but he knows that if he brings them all out you are likely to become confused and undecided, so he just hammers away at you on one policy



"ONCE HE FINDS WHAT YOU FANCY HE WILL TRY TO SELL THAT STYLE"

and does his best to help you decide to buy."

"I have noticed that, now that you speak of it."

Separating New and Used Car Selling.

"The same principle is important in selling used cars and is one reason why it is advisable to separate your new and used car departments if your business is big enough. If a salesman has nothing to sell but used cars he is able to concentrate on selling used cars; he doesn't have to worry about the new car sales and he, in a way, becomes a used car specialist. The prospect who meets this salesman knows the salesman has used cars and nothing else and is therefore precluded from trying to switch the conversation to a new car.



"IF HE KEPT SHOWING HIM EVERYTHING IT MIGHT KILL THE SALE"

"On the other hand, it relieves the new car salesmen of worrying about the used cars. They don't have to keep an eye open for a chance to work off a used car; they can concentrate on new cars and do better work. But even the used car salesman can do his best if he makes up his mind that the prospect needs a certain car in his assortment and does his best to make the sale of that particular car. If he walked the prospect around the shop and kept showing him everything and then left it to the prospect to decide what he wanted it would set the sale back some distance if not kill it."

"But suppose a prospect in this salesroom fancies an enclosed car."

"No prospect, Tommy, who can afford but one car is going to buy an enclosed car. If he can buy but one car he ought to have a touring car, and it wouldn't be right to try to sell him anything else. But if he has bought the touring car there is nothing to prevent his having an extra limousine body if you can make him think he can afford it. But until you get to be pretty skillful it is just as well to stick to one thing—sell him a touring car; that's the safest.

"I nearly lost a sale once myself by misjudging my man and monkeying with too many cars. It was old MacFarlane—"

"Oh, yes! That fellow with the Appollinaris nose."

"Appollinaris!" exclaimed Reilly.

"Well, it's Grecian or Appollinaris. I don't know which," said Tommy, who reached for his hat with one hand and felt with the other to see if he had enough money to pay for his lunch.

Price-Cutting Again Sustained by Court.

Bearing out the United States Supreme Court's policy, expressed in its opinion in the Sanatogen case, this same tribunal this week supplemented its disapproval of price licensing under patents by rendering a similar decision in regard to price maintenance under a copyright. It was held that the holder of a copyright cannot compel a dealer to sell the copyrighted article for a fixed price.

The suit was brought by R. H. Macy & Co., one of New York City's largest department stores, against the American Publishers' Association, which comprises about 75 per cent. of the publishers and about 90 per cent. of the wholesale and retail book dealers in the United States. The association sought to prevent Macy's from cutting prices on copyrighted books.

Moline Also Adopts a Knight Trade Mark.

Having espoused the cause of the Knight engine in no uncertain fashion, the Moline Automobile Co. has adopted a new trade mark to better fit the Moline-Knight car. It comprises a combination of gold and royal blue colors, the color scheme of King Arthur's knights, the central figure being a reproduction of the famous painting of Sir Galahad on a shield-shaped medallion of gold. On one side of Sir Galahad is the name Moline and on the other the name Knight, printed in white with a backing of blue enamel. Sir Galahad, it is pointed out, was the most perfect of King Arthur's Knights of the Round Table.

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"LIE" AND "TREASON" HEARD AT A. A. A. ANNUAL MEETING

Ohio Delegate Arouses Mighty Storm and Is Promptly "Called"—Wilson, of Pennsylvania, is Chosen President.

Ohio, as has been the case for the past several years, supplied the fireworks at the annual meeting of the American Automobile Association, which occurred in Richmond, Va., on Tuesday last, 2d inst. Dr. Bonifield, of Cincinnati, did not make himself heard but his former clubmate and fellow pyrotechnist, Dr. A. B. Heyl, was there and touched off the display. He did so not by word of mouth but by word of pen, and what he wrote was of a character sufficient to cause R. P. Hooper, former president of the A. A. A., twice to denounce it as an "infamous lie," and for Delegate Hawkins, who, like Hooper, comes from Pennsylvania, to propose a resolution charging Heyl with "treason" and providing for the appointment of a committee of five to try him on that accusation.

Heyl's sky-rockets, pin wheels and aerial bombs first appeared in a Cincinnati paper; they occupied nearly two columns and were of a really amazing nature. In a loosely-knit denouncement he alleged that the organization was in the hands of an "inner ring" and that practically nothing it has done, or is trying to do, amounts to a row of pins, or is free of taint of some description.

When former President Hooper denounced the Heyl article as an "infamous lie," a great uproar resulted. Heyl himself was not present. He was hunted up, however, and brought into the room and, in his presence, Hooper repeated what he had said. As Heyl previously had been elected a member of the board of directors, it was then that Hawkins roared out his charge of "treason," which later he put in writing and offered as a formal resolution. Strange to say, Heyl, the man of so many written words, had nothing to say in his own defense and the resolution was unanimously adopted.

John A. Wilson, of Pennsylvania, the newly elected president, was in the chair and when written charges were handed up he slipped the document into his pocket.

"They are going to be tried," he remarked. "I am very tired of it all. Mr. Heyl's charges are either true or they are lies, and the burden of proof is on the man who preferred them."

Delegates Vaile and Gordon, of Ohio, took occasion to disclaim sympathy with the statements made by Heyl and to add that they did not reflect the views of a majority of the Ohio members.

Before the uproar arose, most of the business of the meeting had been disposed of, officers elected being as follows:

President, John A. Wilson, of Pennsylvania; first vice-president, Dr. H. M. Rowe, of Baltimore; second vice-president, Ralph W. Smith, of Colorado; third vice-president, F. L. Baker, of Colorado; fourth vice-president, J. H. Clarke, of Minnesota; fifth vice-president, Preston Belvin, of Virginia; chairman of the executive committee, A. G. Batchelder, of New Jersey; treasurer, H. A. Bonnell, of New Jersey; secretary, J. M. Brooks, of Connecticut. The rules were suspended and the secretary was instructed to cast the ballot of the convention for the nominees.

Executive Committee: Alabama, Dr. G. J. Griel; Arizona, George Purdy Bullard; California, F. L. Baker and P. J. Walker; Colorado, Ralph W. Smith; Connecticut, F. T. Staples; Delaware, John Bancroft; Georgia, F. C. Battey; Idaho, Theo. Turner; Illinois, Allen S. Ray and Henry Paulman; Indiana, P. C. Rubush; Iowa, G. Decker French; Kansas, C. W. Barnes; Louisiana, P. M. Milner; Maine, John C. Scates; Maryland, Dr. H. M. Rowe; Massachusetts, J. P. Coghlin; Michigan, W. E. Metzger; Minnesota, Asa Paine; Missouri, Roy D. Britton and H. D. Train; Montana, E. P. Mathewson; Nebraska, Harry Lowrie; Nevada, C. G. Patrick; New Hampshire, J. A. Reynolds; New Jersey, Dr. J. M. Faulkner; New Mexico, J. S. Mactavish; New York, Dr. H. Lewis and F. S. Webb; North Dakota, S. W. Richardson; North Carolina, Col. Beneham Cameron; Ohio, Harry Gordon and Harry Vaile; Oregon, W. J. Clemens; Pennsylvania, Stedman Bent and Paul C. Wolff; Rhode Island, C. N. Doe; South Carolina, Albert S. Farmer; Texas, C. H. Verschoyle; Vermont, E. C. Smith; Virginia, Preston Belvin; Washington, A. G. Pritchard; West Virginia, Elmer Hough; Wisconsin, J. L. Drought.

Later, President Wilson announced the reappointment of George C. Diehl, of Buffalo, N. Y., to the chairmanship of the Good Roads Board; Howard Longstreet, of Philadelphia, Pa., to the chairmanship of the Tourists' Information Bureau, and William Schimpf, of Brooklyn, N. Y., to the chairmanship of the Contest Board, though it is understood that Schimpf will decline to serve; Charles C. James, of Ohio, takes the place of Charles Thaddeus Terry as chairman of the Legislative Committee.

The business was forwarded with such dispatch that, although two days had been fixed for the meeting, but one day (Tuesday) was required.

Much time was devoted to the discussion of the financial situation of the organization, particularly its official organ, the American Motorist. In an effort to obtain more revenue, a motion was offered to change the flat membership fee to a graded scale based on the membership of each club, but the proposal met with opposition and the matter was referred to the executive committee.

It was also brought out that the New York State Association had refused to pay its per capita dues to the national organization, and that all was not peaceful between the Ohio State organization and the clubs which compose it. Delegate Vaile, of Ohio, said, however, that Ohio would work out its own problems, but a motion was offered that New York be dropped from the national organization if the proper amount of dues was not forthcoming. The motion was amended so as to include any State which failed to pay the required amount of dues, but, after much discussion, in which the situations were frequently explained, the chair refused to entertain the motion or the amended motion and the matter went by in default of action.

Four resolutions reported by the committee on resolutions were adopted without dissent.

The first expressed the A. A. A.'s appreciation of Franklin K. Lane, Secretary of the Interior, and Adolph C. Miller, Assistant Secretary, for their work in developing the national reservations and making them easy of access to tourists. The resolutions also advocated increased appropriations for such parks.

The second resolution reiterated the A. A. A.'s attitude toward Federal aid in road building and favored the enactment of a law which shall obligate the States to expend an amount of money proportionate to that spent by the Federal Government for roads which directly concern the farm population.

The third resolution favored the enactment of the Adamson bill, a substitute for the original so-called Federal registration bill, and which proposes that any automobile owner having registered his car in his own State shall be privileged to go anywhere in the United States without additional registration.

The fourth resolution again placed the association on record as being opposed to the registration tax on automobiles unless it shall be in lieu of all other taxes, and the money thus raised be expended for road maintenance, and that where the constitution of a State does not admit of the registration tax being in lieu of the personal property tax, there shall be appropriated annually from funds from the State a sum equal to that accruing to the State treasury from the taxation of automobiles. The resolutions were adopted singly and in toto.

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In the light of unlooked-for developments was a communication from the Union Pacific Railway urging the A. A. A. to lend its assistance to a movement having for its object the changing of the rear lights on automobiles from red to some other color. The railway company's letter stated that many accidents had been caused by confusion of automobile rear lights with railroad signals, and that more would occur when the Lincoln Highway is built.

Before adjournment, Boston was selected for the 1914 meeting.

Dr. Heyl's charges, which caused the uproar, allege, among many other things, that the A. A. A. is controlled by an "inner ring" and that it is "conducted in the interests of manufacturers of automobiles, automobile accessories, road machinery and big road contractors."

He suggested that the A. A. A. corporation consists of "Messrs. Terry, Batchelder, Diehl and the manufacturers." He describes those three men as the "active officials of the A. A. A." Attorney Charles Thaddeus Terry, of New York, chairman of the A. A. A. legislative board, without salary, he declared is likewise attorney for the National Association of Automobile Manufacturers, which is out of business, and also of the association of accessory manufacturers, and for the Weed Chain Tire Grip Co. and the Klaxon horn people," all of which will give pain to at least three other attorneys, as Terry is the legal representative for none of those named, although Heyl declared that, "on good authority," Terry's "retainers from these people amount to $20,000 a year.

George C. Diehl, chairman of the A. A. A. good roads board, Heyl styled a "professional politician," and Heyl could not understand why he could run all over the United States in the interests of good roads without compensation.

A. G. Batchelder, chairman of the executive board, draws a salary of $6,000 a year and expenses, but Heyl says what he does for the amateur automobilist is an "unknown quantity, while what he does for the manufacturers and road builders is quite apparent."

The Cincinnati man hinted broadly that the bylaws had been juggled or altered to perpetuate the "inner ring," and poohpoohed the good roads work and practically every other field of A. A. A. endeavor. He wrote of "colonization schemes of new directors," of "sand bagging" which would be performed at the Richmond meeting and predicted that at least eight of the States of the Middle West would withdraw from the A. A. A. and form a "national association which will stand for the interests of the amateur automobilist and for the protection of the general public only."

DASH CLOCK TRADE MEETS TREND TOWARD FLUSHNESS

Disappearing Winding and Setting Keys Features of New Waltham Model—Another Attaches to Dash Without Screws.

The trend toward flush surfaces in automobile construction, which has made its greatest progress in the smoothing out of body side surfaces, has been felt even further, it having now reached the accessory field; **the popularity of flush surfaces** has



WALTHAM TELESCOPING CLOCK

led the Waltham Watch Co., of Waltham, Mass., to incorporate this feature in two of its new models of automobile dash clocks, the flushness being accomplished by a new and special case construction.

The objects which have been accomplished are: An entirely smooth surface of the clock; and the projecting of the clock but a small distance from the surface of the dash. Clocks of this construction are set



WALTHAM "FLUSH MOUNT" TYPE

into a hole in the dash, and, whereas this would be possible with many other types of clock, the new Waltham, known as Model M, contains no fastening screws. So far as the driver of the car is concerned, the clock appears to be stuck to the dash.

This is achieved by means of two flanges, both shown in an accompanying illustratiton. One is in contact with the bezel of the clock and rests against the face of the dash; the other turns on a threaded surface back of the first flange, so that when the clock is inserted in the hole in the dash from the front the rear flange may be turned up and the dash clamped tightly between the two flanges. A small setscrew holds the rear flange in a tight position.

Model W achieves flushness at a different point. As shown in the illustration, the winding key and setting devices are raised up out of the case at the top of the bezel and are in position for use. When the winding and setting are completed the keys may be tipped over into the bezel and the bezel is pushed back into its telescoping case and fastened with a bayonet lock. A spring pushes the bezel out when the bayonet device is unlocked for winding.

The Waltham company also has introduced a new feature in the lettering of its dials; instead of placing white letters upon a black surface with the possibility that black will work through and the white lose its purity, the whole design is produced by a photographic process.

S. A. E. Lengthens its Winter Program.

Several additional papers have been scheduled for presentation at the annual winter meeting of the Society of Automobile Engineers which is to be held in Grand Central Palace during January 6 and 8 next. These include "The Need for Dissemination of Electric Vehicle Data," by W. J. B. Thomas, Chief Engineer of the Century Electric Car Co., of Chicago, Ill., which will be read January 6th at the afternoon session; and "Automobile Effectiveness," by D. L. Gallup, assistant professor of gas and engineering of the Worcester Polytechnic Institute, to be read at the same session; "Taxicab Design," by L. P. Prossen, for the evening session the same day; "Electric Gear Shifting," by Frank N. Nutt, chief engineer Haynes Automobile Co., which is to be read during the morning session on Jan. 8th; "The Possibilities of the Cyclecar," by Wm. B. Stout; "Radiators," by J. W. Cain, chief engineer McCord Mfg. Co., both for the same session; "An Electrically Controlled Dynamometer for Testing Gas Engines," by N. C. Johnson; "The Exhaust Discharge and the Utilization of its Energy," by F. C. Mock, engineer Stromberg Motor Devices Co., both for the afternoon session on January 8th.

Apperson Establishes Branch in Seattle.

The Apperson Bros. Automobile Co., of Kokomo, has established a branch in Seattle, Wash., at 907 East Pike street. It is in charge of D. C. Guichard, who at one time was associated with the Apperson agency in Seattle.

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SELECTION OF SALESMEN AND TRAINING THEM

Budlong Instructively Discusses Vital Subject from Several Angles—Parts the Sales Manager Should Play—Dummy Sales as Stimulant of Wits—Ideal Sales Department and Methods Outlined.

By M. J. BUDLONG, President Packard Motor Car Co. of New York.

The wise selection and proper development of salesmen are two of the most important functions connected with the successful marketing of any product. The need for them in the motor vehicle industry was never greater than in the present cut-throat era. Quality of product will always count, of course, but proper presentation and energetic pushing are absolutely essential in any organization that is to keep its head above water.

In the matter of selection, one has always the alternative of filling new sales positions with men trained in one's own organization and without sales experience, or experienced salesmen trained elsewhere.

Why Use of Home Material Is Best.

In general, the arguments are all in favor of home-made material, first in recognition of good service among one's own employes, and to give them one and all an incentive for better work, and, second, because their previous experience has grounded them in the traditions and policies of the business, a thorough knowledge of which is so essential to the proper equipment of the salesman.

In securing men for the selling force from one's own organization, none should be considered who have not made good in every duty assigned to them. Hard and unremitting work alone will bring success to a salesman, and one who has not proven elsewhere his capacity for such work is not a suitable candidate.

Besides a successful record, an enthusiastic disposition is an important qualification. To become a good salesman one must be a natural student and a natural booster, and the born enthusiast is both of these. Such a man will have been studying out of hours the things he hasn't had time to learn during the business day; he will have been prying into matters which the drudge would overlook. Thus, when called on, he will be ready.

The same disposition will carry him rapidly forward, once launched on the firing line. He will instinctively note the shortcomings in his own equipment, and will struggle day and night to eradicate them. Each time he finds himself deficient in his technical knowledge or method of approaching a prospect, he will profit by it and learn as he goes. Often enthusiasm with sufficient knowledge to back it up, will win over customers by its force alone.

Ability to talk convincingly is another prime requisite; a good salesman must bring his arguments home, and if his own confidence in the article he is selling is sufficiently great, and his knowledge sufficiently broad, he will have the right foundation. Add to these assets the capacity for forceful expression and your salesman becomes nearly irresistible.

Pleasing personality and good address, which are almost entirely natural gifts, are, of course, practically indispensable. It is assumed that no candidate who does not possess these attributes, at least partially, will be considered. While they can be developed to a certain extent and while a man who does not possess them conspicuously may, with perseverance and stick-to-itiveness, advance to a degree, no two characteristics will go so far in themselves, and added to the others previously enumerated will push him so far ahead.

Past Records a First Consideration.

When it becomes necessary, as it sometimes does, to abandon the civil service policy and select experienced men from the outside, the first consideration in every case is the candidates' past records. While they may not have been in surroundings most harmonious to their development, yet there is usually some indication of their ability which will be helpful in eliminating those who would not prove worth developing. Naturally, the first interest in any man's record is his personal standing with former employers as to habits, personality and character. Other indications of value are the changes he has made and the results he has secured in each connection. It is usually safe to assume that one who has changed persistently, no matter how good his results have been, is a rover and will probably never take root anywhere.

A first impression of an experienced man counts for much, for it may be inferred that his habits are pretty well fixed and that he is too old a dog to learn many new tricks. Therefore, the impression he makes on you is likely to be duplicated on your customers. If he is neat, well groomed, magnetic and convincing without being egotistical, he is worth considering at least. Right here a clear distinction should be made between costly or loud dressing and the sort of neatness which indicates refinement.

The value he places upon his services must necessarily be taken into consideration, as it may be prohibitive. If he is the right man, he will be willing to prove his worth. His temperament, too, is extremely important. If he will not fit harmoniously into the existing organization he is not the man to select.

Requisites for Field Work Salesmen.

It is taken for granted that an experienced motor car salesman is thoroughly familiar with automobile construction, and is possessed of sufficient technical knowledge both as to mechanical and coach work. If he appears deficient in these particulars it may be inferred that he has wasted his opportunities and will not fill the bill.

In choosing salesmen to represent the company in territory remote from the central organization, absolute reliability is essential. Such men must be capable of implicit trust, both as to business ability and personal habits. They must also have discretion and good judgment, for their bearing and reputation in the community will determine in a measure the respect in which the company is held.

Competition in the commercial field is so fierce and the knowledge required to meet it successfully so exact that forceful men are needed, with both experience and business training. Its prospects take nothing for granted. Handsome lines, soft cushions, pretty colors and the like, are utterly minus in their bearing on sales. Every prospect is strictly "from Missouri" and is interested solely in what your proposition means to him in dollars and cents. Your salesman, therefore must have knowledge of competitive hauling cost at his finger tips. Problems of maintenance and upkeep must be of the kind he "eats alive." Pleasing personality and magnetism play their part in securing this business, of course,

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but the first requirements are knowledge and force—the ability to meet business men as a business man and give them the kind of arguments they can't refute or afford to disregard.

These remarks on the important characteristics to find or develop in salesmen of all classes lead naturally to a description of the methods whereby the successful sales manager trains his force.

A sales organization is like any working aggregation in a competitive field. Well led, it is an army—an efficient fighting machine; poorly led, it is a mob, with some individual excellences and many individual faults. The prime requisites for the best results are (1) capable salesmen, (2) a sound policy, (3) individual training, to improve each unit to the uttermost, and (4) collective training, to promote "team work" and departmental efficiency.

Individual excellence is essential to collective results and to mold his force as a whole the sales manager must know his men and dwell long and faithfully upon their separate development. Patient coaching, carefully applied encouragement, the tempering of criticism with judgment so that loss of confidence and enthusiasm will not result, are all necessary to the training of the selling force as a whole.

Technical Training Prime Essential.

Much time is saved at the outset if men chosen for the sales force are all so well grounded technically that extensive teaching in regard to the product itself is unnecessary. A man thus equipped will absorb, from personal observation, the characteristic features and advantages of each new model as it appears. He will be able also to acquaint himself readily with the essential features of competitive products, and will thus shortly possess himself of the kind of knowledge that is power in the work of selling motor vehicles. The sales manager's first duty is to so direct this power that its full value will be realized, and restrain absolutely that blighting tendency to "knock" others' products, which is so often its accompaniment.

The influence of the sales manager must also be felt in the matter of training his subordinates to tactful alertness on the floor. Nothing gives a customer so favorable a first impression as to be immediately and pleasantly met as he enters the salesroom by a wide awake salesman, with apparently nothing he so greatly desires to do as sell that particular customer the finest car on earth. Many a sale is made on the strength of the customer's first reception, and not a few are lost.

Finesse in working a prospect is properly the next subject of instruction. Different customers require wholly different methods and the successful salesman must learn to study human nature and to size up his prospects almost instinctively. He must become a quick thinker, and meet each phase of his dealings with every prospect much as a physician meets the changed conditions of his cases. He must know when to persist in the line he is following and when not—when to shift his ground and when to stick to his point. He must learn to attack where the defense is most vulnerable, and must acquire aptitude for changing argument or subject to fit the customer's mood or ideas.

Knowing When to Appear Aggressive.

Discretion and good judgment are necessary to know when to be aggressive and when not to be so, which can only be learned by experience, but the salesman can and should always keep a customer interested by explaining to him the fine points of the car, by offering to show him the buildings or equipment, by talking Service to him, and by making him feel at all times that it is a pleasure, not a duty, to talk with him.

Where true salesmanship also shines is in keeping a customer satisfied, whose requests must in some particulars be refused. Such refusals require most diplomatic presentation and should never be curt or blunt. The policy of the company, which makes special concessions impossible, should be explained in such terms that any broad-minded man may see its force and understand its application to his particular case.

Salesmen often feel unduly discouraged over the loss of sales upon which their finest art and utmost efforts have been expended, and feel that the limits of their ability have been reached. It is the sales manager's duty to keep his men cheered up under such circumstances, and prevent loss of confidence. The lost sales should be analyzed and the causes established.

Leaving Sweet Taste After the Sale.

Every salesman should be impressed with the absolute necessity of closing his sales in such clean fashion that "comebacks" will be impossible—which is simply a matter of straight talk to each customer from the outset. It requires considerable strength of mind at times to keep absolutely on the safe side of false impressions, but the salesman who cannot do it will never make good in a reputable organization. Each contract should be thoroughly understood, as to all its terms, before the sale is closed, and all disputes thrashed out before delivery, so that the customer may know just what he is going to get and have no basis for subsequent claims.

Training of the sales organization as a body must be carried on at times when no interference with its regular work will result, which means, of course, before or after business hours. In a well drilled organization, short meetings are held several times a week in the early morning before the time of customers' arrival in the salesroom, and once each week evening meetings of greater length comprising the entire force, as a regular part of each member's duty, should bring out thorough discussion of all subjects of common interest such as are foremost at the time. The daily sessions, because of their brevity, necessarily deal with matters of immediate importance. In them lists of immediate live prospects should be discussed, with a view to closing as many as possible during the day. Each salesman should report the result of his previous day's calls. Lists of lost sales should also be handed in, with the reasons for each loss—which it is sometimes profitable to discuss.

These occasions should also be utilized to keep the enthusiasm of the organization at concert pitch. No element is quite so valuable to the organization as a whole, and it is the sales manager's business to see that it is constantly infused. On such occasions it is also possible to drop many useful hints by way of indicating the errors of their ways to the men who have noticeably been tending toward careless habits of any kind, such as tardiness of morning arrival, unpunctuality in the keeping of appointments, lack of dignity in conduct on the sales floor, etc.

Learn Greatest Obstacle and Meet It.

It is very helpful, too, to secure from each salesman a statement as to his greatest obstacle in making sales, so that it may be discussed for the benefit of all. One can thus fight back constantly all adverse conditions and frame up a campaign, each week, to combat all present hindrances to the increase of business.

Dummy sales are fruitful sources of suggestion and tend to stimulate the wits of all concerned. The buyer brings to bear all the methods he can think of to make himself a difficult prospect and the "salesman" is extended to his uttermost to convince him, and the audience, that there is logically but one car to buy.

It is important also to coach the force on the proper method of presenting service advantages to customers, so as to lay the right foundation for their appreciation of the service department after delivery.

All other things being equal, the greatest success will be achieved by the organization which is composed of the most carefully selected material, captained by the most thoroughgoing organizer, and coached without ceasing, both individually and as a unit, in every refinement of the art.

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PACKARD "SIX" ROAD TEST SHOWS DYNAMO FUEL COST

Cost of Electric Lighting, in Terms of Fuel, Scientifically Determined—How the A. C. A. Conducted the Elaborate Tests.

The electric lighting generator on an automobile equipped with a complete electric lighting and starting system is not a big machine—in fact, as dynamos go it is a small one, and the energy required to drive it is quite insignificant by comparison with the rated power of the engine from which it is driven. Nevertheless a certain amount of power is required all the time the generator is running, and the production of this power necessitates the consumption of a certain amount of fuel in excess of what is required for the propulsion of the car. Just what this extra fuel consumption amounts to is a question that has been bobbing up persistently since car-lighting generators came into use, and while the manufacturers of the little dynamos can tell to a nicety the power their own machines will absorb, under given load conditions, the real question is: How much will the use of the electric lighting system increase gasolene consumption under actual running conditions?

Manifestly the answer will vary with different combinations of cars and lighting systems, and the figures applying to one car might have no bearing on others. So when the Packard Motor Car Co. became curious as to what electric lights were costing their owners they went directly to the task of finding out by the simple expedient of turning a car over to the Automobile Club of America to be given an official test under actual road conditions. The car was a model 2-38 "six" with five-passenger body, and not only was the car fully equipped, but it carried a not inconsiderable overload of spare tires, tools, chains, etc., in addition to the auxiliary gasolene tank for testing, the tank supports and the various electrical measuring instruments. With everything on, but without passengers, the car weighed 4,862 pounds; on all the test runs the full complement of five passengers was carried. The car was driven with the top, windshield, and all side curtains up.

The generator, a Bijur machine, delivered its current to a Willard 120 ampere-hour storage battery. The dual unit system is employed, the starting motor being a separate machine. The illuminating equipment consists of ten lamps—two head lights, two side lights, two tail lights, two speedometer lights and one each dash and tonneau lights. The testing equipment consisted of a special gasolene tank accurately calibrated to hold one gallon of gasolene and fitted with a sight-reading tube so that the exact moment when the gallon was consumed could be observed; electric measuring instruments for indicating current flow; and the speedometer and odometer of the car. The speedometer was used in gauging the speed of the car and the odometer in determining the distance covered. The latter instrument was checked constantly by milestones known to be accurate, and found to tally exactly.

As the car was driven throughout the test with more than full weight load, with top and windshield offering maximum air resistance, with all lamps burning and the battery charging, it is clear that the test could not give average running results, but indicated almost maximum generator power consumption—in fact, it would seem that the only way of increasing the power absorbed by the generator would be to further discharge the battery—which, again, would by no means represent an average condition.

Five test runs were made, each run being continued until precisely a gallon of fuel had been consumed. The trials were carried out on the Long Island Motor Parkway, starting at a point near the Garden City lodge and running east until about half a gallon of gasolene had been consumed and then turning and running back until the fuel was gone. No ignition, carburetter or other adjustments were made. Speed was maintained as nearly constant as possible by the use of the throttle. Brakes were used only when stopping to make the turn for the run back. Two runs were made with the generator in action, one at 20 miles an hour and the other at 40 miles an hour; two with the generator removed from the car and its place taken by a plain shaft running in ball bearings, also at 20 miles an hour and 40 miles an hour; and one extra check run at 20 miles an hour with the generator running. Just previous to each of the runs with the generator working the starting motor was run for several minutes, turning over the engine and drawing current from the battery until it was so far discharged that the total output of the dynamo, for supplying current to the lamps and at the same time charging the battery, averaged 17 amperes. The lamps alone drew approximately 10 amperes. The difference in potential across the generator terminals was 7 volts. The results are given in the following table:

Run No.	Average speed M. P. H.	Miles on one gallon gasolene.	Ampere output of generator
1	20.8	13.0	18.0
2	40.6	11.0	15.5
3	20.2	13.7	Generator off
4	40.6	11.4	Generator off
5	20.8	13.2	16.8

Spark about ¼ advanced runs 1, 3 and 5.
Spark full advanced runs 2 and 4.
Gravity of gasolene 61.1 Beaume at 60 deg. F.

The figures are interesting. No. 1 and No. 5, the latter the check run, were made at 20.8 miles an hour with the generator working and delivering 18 amperes and 16.8 amperes, respectively, for the two runs; the mileages were 13 and 13.2, respectively. No. 3 at 20.2 miles an hour with the generator removed gave a mileage of 13.7. This indicates a difference of 4.6 per cent. in the gasolene consumption due to the runing of the generator.

The two runs made at 40.6 miles an hour showed, as of course was anticipated, a higher gasolene consumption due to the less economical speed of the car. With the generator running and delivering 15.5 amperes the mileage was 11 flat; with the generator removed the mileage was increased to 11.4, a difference of a shade less than 3.7 per cent.

These figures indicate, obviously, that at about 20 miles an hour the generator reduced the mileage on one gallon by .6 of a mile and at about 40 miles an hour by .4 of a mile. In other words, the mileage that could be covered on 100 gallons of gasolene with the generator removed would require 104.6 gallons at a 20-mile rate and 103.7 gallons at the 40-mile rate with generator running. Figuring still another way, it works out that while 7.3 gallons would drive the car 100 miles at about 20 miles an hour without the generator, it would require 7.6 gallons to drive the car the same distance at the same speed with the generator working. At the 40-mile rate the gasolene consumption for 100 miles without and with the generator would be 8.7 gallons and 9 gallons, respectively. Averaging the results at both speeds and figuring gasolene at 20 cents a gallon, it cost $1.60 per 100 miles to run the car without the generator and $1.66 per 100 miles with the generator working, the generator making an almost insignificant difference of 6 cents per 100 miles.

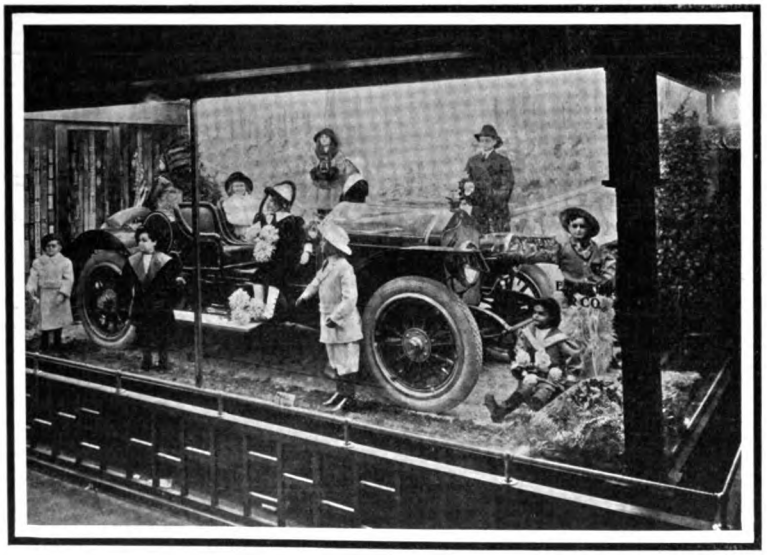
The conditions of the test were such that the results obtained probably are as accurate as it is possible to get them under the conditions. The arrangements were made and the testing equipment installed under the supervision of Herbert Chase, A. C. A. laboratory engineer, who personally conducted the tests and took the readings. The results indicated, however, are by no means average results—that is, such results as would be obtained in ordinary running, day in and day out, for it is obvious that in ordinary running the lamps are not burning all the time, nor is the battery being charged all the time. On the contrary, the only current consumption during the day is that which is required for replenishing the battery to replace current used for starting, while at night the generator ordinarily would have to furnish but little current in excess of the 10 amperes or thereabouts needed for the burning of the lamps.

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GETTING PUBLICITY OUT OF DRYGOODS WINDOW SETTING

Dallas Dealer Makes His Car the Center Piece in an Attractive Display —Realistic Wax Figures Suggest Great Possibilities.

Utilizing the windows of a drygoods store to show off a car would probably be regarded as very expensive or as an impossibility by many a dealer, but that it is not so difficult as it might seem to arrange for this scheme was demonstrated by the National dealer in Dallas, Tex. Both he and the firm of E. M. Kahn & Co. attracted considerable attention by the "stunt."



DALLAS (TEX.) DEALER'S EFFECTIVE DISPLAY IN A DRYGOODS STORE WINDOW

The dealer arranged with the Kahn company to put a semi-racing National in one of Kahn's best windows and the drygoods house peopled the window with wax figures, showing off their latest wearing apparel. The attractiveness of the clothes was emphasized and the car stood out well.

Although the use of wax figures seems to have been monopolized by dealers in clothing, there seems no reason why the automobile dealer could not introduce an innovation by utilizing "dummies."

Will Call Itself Parcel Post Company.

Parcel Post Equipment Co. will be the name of the reorganized Grand Rapids (Mich.) Motor Truck Co., which, as Motor World stated last week, will produce a light, 500-pound parcel delivery wagon with the receptacle in front and the driver at the rear. Although the new company has not yet been incorporated, work on the parcel wagon is in progress at the Grand Rapids plant. The men concerned in the enterprise are Frank T. Hulswit, E. Alfred Clements, Carroll F. Sweet, William F. McKnight, L. W. Coppeck and John I. Taylor, the latter of Boston.

Eau Claire Company to Build Engines.

Kim Rosholt, T. W. Rosholt and R. P. Rosholt, principal stockholders in the Northwestern Mfg. Co., of Eau Claire, Wis., whose industrial activities heretofore have consisted mainly of the manufacture of log haulers and lumbering machinery, have entered the gasolene engine manufacturing field; they have formed the Northwestern Motor Co., with headquarters in Eau Claire, and plan to produce for the automobile and tractor trade. The capitalization is $25,000.

Waverley Makes Known Its Profits.

According to reports submitted at its annual meeting last week, the total business of the Waverley Co., of Indianapolis, during its last fiscal year, amounted to $1,312,815.94. Its capital surplus and undivided profits amount to $590,000. The officers elected at the meeting are as follows: Wm. B. Cooley, president; Herbert H. Rice, vice-president; Wilbur C. Johnson, secretary; William Kothe, treasurer; Hugh Daugherty, Joseph C. Schaf, Alexander C. Ayres and Hugh M. Love, directors.

Golden West Factory Actually Building.

The Golden West Motors Co., which was organized at Sacramento, Cal., several months ago, has completed one of its factory buildings and work is in progress on a second one. When the plant begins operation, it will make a four-wheel drive car.

BRITAIN'S EXPORTS GAIN $4,000,000 IN TEN MONTHS

Shipments During First Ten Months of Present Year Total $18,000,000 —Value of Imports Increases to $30,000,000.

The exportation of automobiles and allied products from England during the first ten months of 1913 amounted to £3,612,326, or in round numbers $18,000,000, of which £1,957,934 represents 6,221 cars, £403,572 1,046 chassis, £591,118 tires and £659,702 parts. This compares with a total value of £2,908,416, or roundly $14,000,000, in the first 10 months of 1912, of which figure £1,563,962 represents 4,083 cars, £351,713 959 chassis and £992,741 tires and parts. In October, 1913, the exports were valued at £445,022, or about $2,000,000, and in that month of 1912 £375,843, or about $1,800,000.

The products imported by Great Britain in the first 10 months of 1913 were valued at £6,169,550, or about $30,000,000, of which £1,451,989 represents 5,814 cars, £1,580,731 6,706 chassis, £2,166,732 tires and £970,098 parts; during the same period of last year the value was £5,985,744, or about $29,000,000, made up as follows: 6,621 cars, £1,595,409; 6,492 chassis, £1,638,152; tires and parts, £2,752,183.

The imports of these products during October, 1913, were valued at £494,208, or about $2,400,000, of which £110,834 is the value of 523 cars, £142,501 the value of 596 chassis, £108,042 the price of tires and £132,831 the cost of parts.

In October, 1912, the value of automobile imports was £533,059, or about $1,600,000, made up as follows: 403 cars, £117,012; 586 chassis, £147,426; tires and parts, £268,621.

Ward Adds Electric Coupe to Commercials.

Marking a radical departure from the past practice of the company, which heretofore has devoted its energies exclusively to the production of electric commercial vehicles, the Ward Motor Vehicle Co., of New York City, has quietly developed and is preparing to place on the market a coupe model. The first one will be exhibited at the New York show in Grand Central Palace.

Franklin Sales Show Heavy Increase.

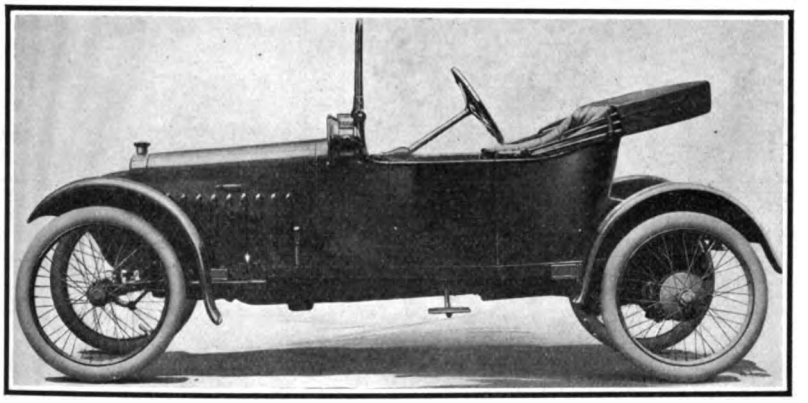
For the 10-month period ending October 31st last, it is officially stated that the sale of Franklin cars showed an increase of 76 per cent. over the corresponding period of 1912. The sales during September and October doubled those of last year and this notwithstanding the existence of widespread pessimism.

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FIRST SAXON LIGHT CAR REVEALS BIG CAR PRACTICE

First of 10,000 to be Built by Company of Chalmers Officals Has no Cyclecar Features—Roadster Priced at Less Than $400.

Although it was not wholly a state secret that officials of the Chalmers Motor Co., of Detroit, Mich., were behind the organization of the $350,000 Saxon Motor Co., of Detroit, which purposes producing a light two-passenger car designed to sell for less than $400, the fact was not authoritatively announced until this week, when the vehicle itself also was formally introduced; it proves to have nothing in common with that type of vehicle which is known by the designation cyclecar, being in fact a miniature automobile.



SAXON RUNABOUT, WEIGHING 900 POUNDS AND SELLING FOR ABOUT $400

The company which is to produce it is separate and distinct from the Chalmers company itself, despite the fact that all of its officials are prominently connected with Chalmers affairs. Its head is Harry W. Ford, who for the past two years has been a director, and general manager of, the Chalmers company, in which he will retain his directorship and act in an advisory capacity regarding advertising and sales policies. Associated with Ford are G. W. Dunham, who is vice-president of the new company and who is second vice-president and consulting engineer in the Chalmers company; L. R. Scafe, secretary and treasurer; these men, together with Hugh Chalmers, who, though a stockholder, will take no active part in the management of the new company, Lee Counselman, C. A. Pfeffer, C. A. Woodruff, H. H. Pinney, C. C. Hinkley and Percy Owen, form the board of directors. Although the organization of the Saxon company just has been completed, preliminary organization was effected some time ago and the first of the company's cars has been on the road for the past three months. Deliveries will be commenced about March 1st.

The runabout which is to be produced is not a cyclecar in any sense of the word; as the accompanying illustration makes plain, it is a veritable small automobile, retaining the automobile's distinctive attribute, which is its standard 56-inch wheeltrack. The wheelbase is 96 inches, leaving little room for doubt regarding the actual size of the car, and the body has been designed along streamline principles to give plenty of leg and elbow room to the two occupants. The seat is 40 inches in width and 16 inches deep and there is 30 inches of open space between the heel board and the dash; the door is 18 inches in width.

The weight of the car complete is 800 pounds, a factor which contributes in no small way to the unusually low gasolene consumption. It is claimed that the car will run from 28 to 30 miles on one gallon of the needful, oil consumption being correspondingly low. The fuel tank is located in the deep skuttle dash and holds six gallons. In conformity to now standard practice, the steering wheel is at the left side, with the control levers in the center; the throttle control is by pedal and the spark advance lever is placed on the dash.

For power, reliance is placed upon a four-cylinder water-cooled motor with its cylinders cast in a block and produced by the Continental Motor Mfg. Co., from which company 10,000 already have been ordered; valves are of generous size, have steel stems and iron heads and are provided with adjustable tappets; a detachable head covers the four cylinders, which measure 2⅝ x 4½ inches, the rated horsepower being 11.23 according to the A. L. A. M. formula. Both crankshaft and camshaft are drop forgings, the former being mounted in two babbitt-lined bronze bearings and the latter having its cams formed integral; the camshaft is driven by helical gears.

Ignition, cooling and lubrication are effected by notably simple means. For sparks, current is supplied by six dry cells and passed through an Atwater Kent sparker; the cooling water is circulated by thermo-siphonic action through a tubular radiator with a fan whirling behind it by way of creating a positive draft. The motor is lubricated by a vacuum feeding oiling system with the main distribution of the lubricating medium by splash from the connecting rods big end bearings.

Further along in the chassis, a dry disk clutch with three plates, some of which are faced with Raybestos, transmits the power, through a shaft contained in a concentric steel torque tube, to the gearset which is mounted integral with the differential housing. The gearset is of the progressive type and provides two speeds forward and reverse. The rear axle is of the semi-floating type contained in a pressed steel housing and the front axle—both are produced by the Metal Products company—is of the orthodox I-beam section. The outer ends of the driving shafts rotate in Hyatt roller bearings. There are two sets of brakes, both on the rear wheels and operating on drums measuring 8 x 1¼ inches.

The frame of the car is of pressed steel in channel section and is mounted both front and rear on what may be termed quarter-elliptic springs. Wheels measure 28 inches in diameter, are of wire and are shod with 3-inch clincher tires. The road clearance, loaded, is 8½ inches. The equipment is complete, and includes a top with boot, windshield, two gas head lamps, acetylene generator, tail lamp, bulb horn and the usual complement of tools and so forth.

Rural Show to "Keep Trade at Home."

A rural town of 3,000 inhabiltants may not have enough dealers to hold an automobile show, but to the people of Elkhorn, Wis., this does not mean that their town, with a population of 3,250, is not large enough for a show; they are going to have one and expect that about 50 cars will be displayed.

The plan is innovative—at least so far as the Badger State is concerned—and is fostered by Elkhorn motorists who have leased a hall and have begun renting space to the dealers throughout Walworth county, in which Elkhorn is located. The show will be held January 4-10, the week before the show in Milwaukee, about 40 miles distant.

How to Mend Celluloid Windows.

The celluloid windows of side curtains and the like, or, for that matter, anything that is made of celluloid, can be mended and patched by dissolving bits of celluloid in acetone and using the solution exactly as if it were glue. The cement sets in about 15 minutes.

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LICENSING PLAN THAT AIMS TO STOP THE PRICE-CUTTER

Talking Machine Company Does Not Sell, But "Licenses to Use"—Royalty and Retaking Scheme and Novel Insurance Point.

Following the recent decision of the United States Supreme Court to the effect that it is illegal for manufacturers of any article to set a retail selling price for it, one of the prominent talking machine companies has adopted a new selling scheme. The idea of the new plan is apparently to maintain retail selling prices by a license arrangement with dealers and consumers.

Under this plan both the dealer and the ultimate user are licensed only to use the company's products, under title remaining permanently with the company. The agreement gives the company "the right to repossess and retake at any time the patented goods upon the payment to the user of the royalty paid for the use of these goods, less 5 per cent. per annum of the list royalty as to machines, and 10 per cent. per annum of the list royalty as to records, for each year or fraction of a year the user shall have had the use thereof."

The use of other supplies with the products patented by the company in question constitutes an infringement of the patents and a violation of the agreement. Dealers are required to keep complete lists of patented goods in the hands of users.

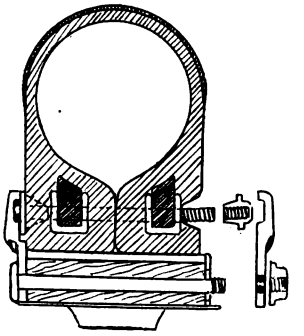
An interesting question, however, has been raised apropos the licensing plan. In the opinion of certain business men it seems that, under such a plan, unless the producer issued a perpetual fire insurance policy to go with his product as a permanent protection, no fire insurance company would be held liable for the loss of such property after distribution occurred.

It is assumed, of course, that the distributor does not part with his merchandise unless the customer pays an amount equal to its value, plus a profit. While the consumer has thus parted with his money, he really does not become the owner of the property, and, consequently, cannot insure it. It must then remain for the producer, it is contended, to protect his product against the risk of fire.

Low Inflation in Rimless Tire.

Working on the theory that the part of a pneumatic tire adjacent to the bead is the weakest part and that its strengthening means improvement of the tire as a whole, a Berlin inventor has devised a tire in which the ordinary form of beading gives way to something entirely different, as the accompanying illustration shows. The sides of the tire, considering the cross-section, are brought down to a square base split in the center, and in each half of the base there is a ring of channel section with a filling of hard rubber; the ring is of bronze so there can be no rusting.

The base of the tire is bolted up independently—that is, without attachment to or connection with any part of the wheel or rim; the bronze channel rings give the bolts a bearing and the hard rubber filling prevents their collapsing under the pressure. The tire, of course, carries the usual inner tube. When bolted up with the tube in place the tire is slipped onto a plain, flat rim, and a retaining ring on each side holds it in place so far as lateral movement is concerned. The heads of the bolts in the



"RIMLESS" PNEUMATIC TIRE

base of the tire are covered by lugs extending radially from the retaining rings, and these lugs, fitting tightly over the heads, effectually prevent circumferential movement, or creeping.

One of the advantages claimed for the rimless tire, as it is called by its German inventor, is that as its attachment to the wheel is not dependent in any degree upon the pressure of inflation, and as there are no beads, the pressure of inflation may be considerably less than with tires of the usual construction. In fact, the pressure recommended for a 120-millimeter tire (approximately 4¾ inches) is but 28 pounds to the square inch. A deflated tire, it is claimed, cannot come off the wheel under any circumstances.

The tire is said to have passed the paper stage and to have been quite thoroughly tested on the road, with satisfactory results. An indication that the inventor's claims are taken seriously in his own country is contained in the fact that the German war office is making experiments with the tire with the object of determining its relative efficiency as compared with the ordinary pneumatic types.

NEW OAKLAND "LIGHT SIX" IS LARGE FOR ITS CLASS

Block Motor with Detachable Head, and Left Side Control, Chief Deviations from Past Practice—Ingenious Brake Adjustment.

Describing its latest model as "the largest car built that comes in the 'light six' classification," the Oakland Motor Car Co. of Pontiac, Mich., has given sufficient information regarding the machine to show clearly that it is the direct descendant of older Oaklands, embodying the Oakland unit power plant system, V-shaped German silver radiator and other features. It departs, however, from former practice in that it embodies left steer. The addition to the line was announced some time ago, but no details were given.

The latest model is designated as model 6-48 and has a motor of the long-stroke type with the cylinders cast in a single block. The cylinder heads are detachable and are held in place by nine bolts. The lubrication system is of the splash type, and is similar to the lubrication systems in use in other cars of the Oakland line. The gear control lever is mounted on the rear of the gearcase, has no bearings to bind and is entirely unaffected by distortion of the running gear.

The equipment of the machine is complete and includes a Delco six-volt electric lighting and starting system with side lights of a new type, no wires being exposed. The electric lighting and starting controls, the speedometer and the oil and air gauges are grouped on the dash and illuminated by an electric light. Tire carriers of new design make it possible to remove a spare tire without moving the top, should the top be folded.

One other improvement consists in the employment of a service brake adjustment that is worked by hand and can be reached without the unpleasant necessity for getting under the car. The gasolene tank is carried low down at the rear, the fuel being fed to the carburetter by air pressure.

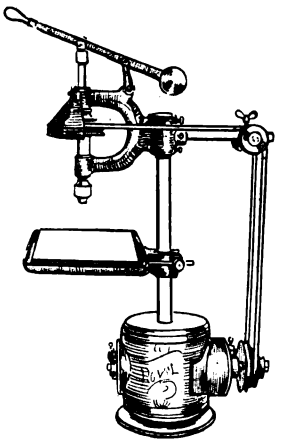
The car is clean in outward appearance, the stowing of the battery box under the front seat leaving the aluminum-covered running-boards free of encumbrances. The fenders are crowned. The lines of the body combine with the sloping hood and the V-shaped radiator in producing a stream-line effect. In addition to other details worked out with a view to the comfort of the occupants, the doors have been made of extra width to permit easy ingress and exit of passengers.

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POWER DRILLS THAT FACILITATE REPAIR WORK

Three Types of Portable and Non-Portable Drilling Tools for Both Light and Heavy Garage Work—Wherein the Electrically-Operated Drill Scores Over Others—Purchasing Suggestions.

In comparatively large garages or in repair-shops where a considerable amount of overhauling work is done, it is probable that something with a greater range of adaptability than the small portable electrically operated drills illustrated and described in Motor World last week will be required; the advantage of being able to drill one hole or several holes without the necessity for dismantling an engine, or any other part of the car, is too apparent to require enlargement; hence tools of the kind find ready use in the average shop. But where, in the course of overhaul work, the chassis requires to be dismantled, it may be more advantageous, after all, to take the work

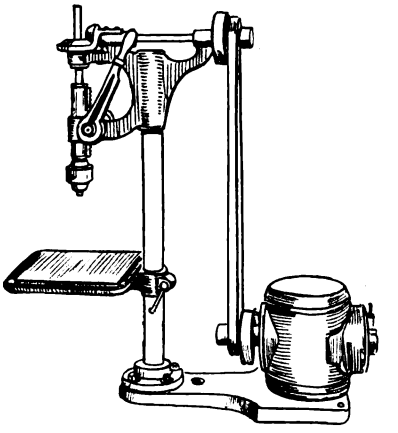


ROYAL BENCH DRILL

to the tool, rather than to take the tool to the work. Incidentally, it is not always possible to do much of the heavier work required in overhauling with a small portable drill of the kind described.

Not to take the place of the small portable tool, but rather to supplement it, there is the bench, or floor, electrically operated drill, which is capable of a considerably greater range of work in that it will handle—depending upon its size, of course—nearly everything from the lightest drilling to the heaviest boring ordinarily required by the automobile repairman. And in this type of modern, labor-saving device there is scarcely less variety than there is in hand tools designed for the same kind of work.

Broadly, tools of the kind can be divided into three general classes, the first class including those that are intended to stand on the work bench, and the second class including those that have a base of their own and therefore are more or less independent of existing shop equipment. The third class is made to include tools which are portable in the sense that they may be moved about



ROYAL SEMI-PORTABLE

the shop; in them the drill spindle is driven by an electric motor through the intermediary of a long, flexible shaft, and they are not, therefore, drill presses, like the others.

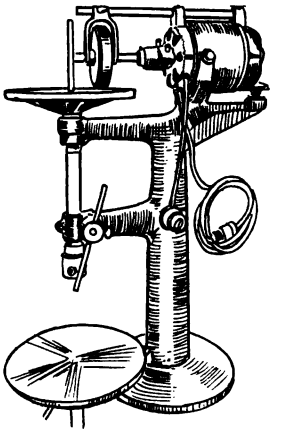
Among the devices in the first class, the Royal, which is made by the A. J. Deer Co., of Hornell, N. Y., is, strictly speaking, a portable drill press, though at the same time it is a bench tool. In other words, though it is intended to stand on a bench, or on any other substantial and convenient base, it is not intended to be fastened down permanently in place. The tool itself is illustrated herewith and, as may be seen by the picture, it has a number of distinctive features.

Designed Only for Light Work.

In the first place, it is essentially a tool for light work and is not well adapted for the heavier drilling that some operations entail; the drill capacity is one-quarter inch. The greatest distance from the chuck to the drill table is 8¾ inches; from the center of the spindle to the column, 5¼ inches; vertical movement of the spindle, 2¼ inches; vertical adjustment of the table, 8¾ inches; dimensions of the table, 8¼ x 10¼ inches; and the net weight of the tool is 120 pounds.

As the illustration makes plain, the driving motor serves as the base for the tool, the drive being transmitted through a continuous round belt running over pulleys which permit five changes in speed of the drill spindle without altering the speed of the motor. The motor is wound for either 110 or 220 volts alternating current of 60 cycles, or 110-220 volts direct current. The drill manifestly is a "sensitive" one, which is to say, for light drilling work, the belt would slip should the drill become jammed and therefore would not be broken.

In a slightly heavier model of the Royal



W. S. FRICTION DRIVE DRILL

drill, the motor is mounted on an extension of the base and drives through a flat belt, the arrangement of the parts being shown by the picture. In this drill the drill table measures 10 x 12 inches, is adjustable vertically 15½ inches, and the distance from the center of the drill spindle to the column is six inches. The vertical movement of the drill spindle is four inches and the drill capacity one-half inch; the net weight is 210 pounds.

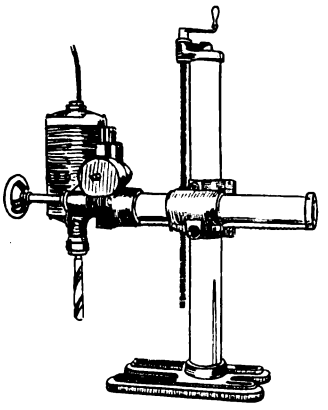
Friction drive for small, sensitive bench drills has been adopted by quite a number of makers of such apparatus, among them the United States Electrical Tool Co., of Cincinnati, O., whose type S tool is illustrated herewith. The design has a number of individualities, not the least important of which is the means of automatically

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compensating for wear in the friction members. The driving motor is pivotally mounted, as shown, and the driving disk is held against the driven member by means of a spring under a foot cast on the motor casing. Speed changes are obtained by the simple expedient of moving the driving disk axially, the range of speeds being from 390 revolutions to 950 a minute.

Specifications of U. S. Drill.

Another individuality of the tool is that the table can be tilted to any angle required by the work. The capacity of the drill is ½ inch, and the principal dimensions are as follows: Height over all, 32 inches; spindle to table, 10½ inches; diameter of table, 12 inches; weight, 112 pounds; travel of the spindle, 8 inches; distance between drill spindle and column, 12 inches. The

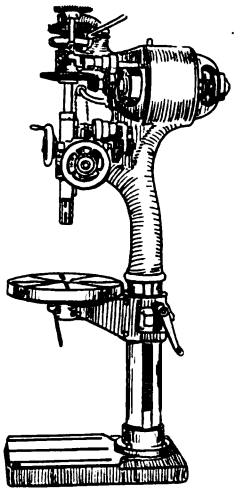


CINCINNATI RADIAL DRILL

motor is wound for either alternating or direct current, according to the voltage specified by the purchaser.

For really heavy work, which includes all operations requiring the drilling of holes more than ½ inch in diameter in metal, a bench drill scarcely is suitable, and for work of the kind the heavy radial drill that stands firmly on its own base on the floor is necessary. In this respect, the electrically operated drill has a distinct advantage over the ordinary drill operated by belting from an overhead shaft in that it can be placed anywhere in the shop where it is most convenient or where the exigencies of space require that it be placed. It is not necessary to govern its location by the position of the shop shafting for the current that operates it will traverse a long wire just as quickly and just as surely as it will traverse a short one; incidentally, the power required to operate the electric tool is considerably less than that required to operate the one driven by belt, for in the case of the former the friction in shaft journals and the transmission loss in the belting is eliminated. Also, it is needless to point out, when the particular job in hand has been finished, the power is shut off and the expense stops at the time of the stopping of the drill.

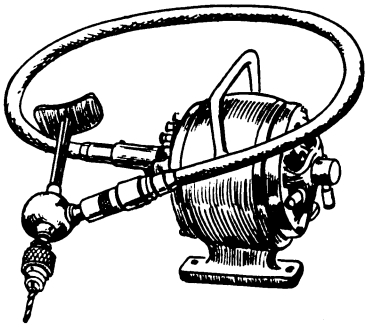
In the purchase of a drill of the kind, he is a wise man who looks ahead with dis-



WILLEY HEAVY DRILL PRESS

cernment; who realizes that though a large drill will do light, small work, a small drill cannot be expected to do very heavy work.

Hence it often is the better part of wisdom to increase the expected initial outlay by a small amount in purchasing a slightly larger sized drill than is actually necessary at the time, than to put in a drill to handle work of the maximum size at the time, and dis-

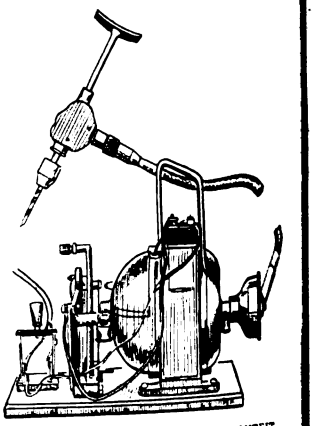


COATES PORTABLE DRILL

cover later that with an increase in business, the size of the work handled also has increased.

Among the larger Scotch type radial drills—radial because they can be operated at any point in a complete circle about the supporting column—the Cincinnati, which is produced by the Cincinnati Electrical Tool Co., of the Ohio city for which it is named, has been designed for the heaviest kind of heavy work and is made in a variety of sizes ranging in capacity from ⅞ of an inch to 2½ inches. All of these various sizes are exactly like the illustration with the difference that the three sizes between ⅞ of an inch and 1¼ inches are fitted with two-speed gears.

The motor in the Cincinnati is mounted directly over the drill spindle at the end of the radial arm. The drill motor can be set at any desired angle and a radius of 2[illegible] inches in any direction; the vertical adjustment, obtained through the lead screw shown in the picture, is 34 inches, the normal feed being by means of a 10-inch hand wheel with quick return. The hand wheel and worm box are adjustable to drill in either a vertical or a horizontal position, thus allowing the operator to work up close



SCHOFF FLEXIBLE SHAFT OUTFIT

into corners. The capacities and weights of the five sizes are as follows: ⅞-inch, 160 pounds; 1-inch, 190 pounds; 1¼-inch, 225 pounds; 2-inch, 270 pounds; 2½-inch, 390 pounds. The motors are wound for either alternating or direct current and the drills are supplied complete with taper socket and length of flexible wiring with the necessary socket to fit any lamp receptacle.

Motor Solid in Support Column.

The Willey 22½-inch electric drill which is illustrated herewith and which is manufactured by the Jas. Clark, Jr., Electrical Co, of Louisville, Ky., is not a radial drill, though it is a most complete tool in every other respect. Its greatest capacity in steel is a hole two inches in diameter, and the speed of the spindle can be varied through a series of gears and back gears from 24 revolutions a minute by geometrical progression to 440 revolutions a minute. As the picture makes plain, the driving motor and the controller are solidly built into the supporting column of the machine, the motor casing, or frame, the controller case and the spindle bearings being in a single piece

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For high speed, the motor is geared direct to the spindle and for low speeds the drive is through back gears which may be thrown into operation without stopping the machine. The power feed is fitted with an automatic stop and has three speed changes by conveniently located cone pulleys and belt. The drill table is raised and lowered by worm gearing and therefore will "stay put" in any position without the necessity for locking it.

The capacity of the drill is holes up to two inches in diameter in the center of a 22½-inch circle, the other principal dimensions being as follows: Greatest distance from spindle to table, 28 inches; greatest distance from spindle to base, 42 inches; vertical traverse of spindle, 10 inches; diameter of table, 20 inches; maximum height of drill with spindle up, 84¾ inches; weight 1,200 pounds; maximum horsepower of motor, 1½; floor space, 20 x 40. The motor is wound for either 110 or 220 volts and will operate only on direct current.

Devices, or rather tools, which fall naturally into the third class—those that are operated by small electric motors through flexible shafts—have a wide field of applicability in the average shop whether much work or little is done.

The Coates Clipper Mfg. Co., of Worcester, Mass., long has been known as the producer of flexible shafts and flexible shaft outfits for a variety of uses and the drill that is illustrated herewith forms only one item in its long list of products. With an outfit of the kind, the motor is placed on the floor, out of the way, leaving the operator's two hands free to guide and hold the drill spindle or the emery wheel or the buffer, as the case may be. Two sizes are made, the first accommodating drills up to 21/64ths of an inch in diameter, or carrying a buff or emery wheel four inches in diameter, and the second accommodating drills up to ½ inch in diameter with buff or emery wheels measuring six inches in diameter. So that the drill can be stopped without the necessity for stopping the motor, there is a clutch incorporated in the end of the flexible shaft and operated by turning the end of the shaft sleeve one-quarter revolution. Motors are wound for any voltage up to 500 either alternating or direct and each outfit includes the motor, flexible shaft, breast drill, clamp spindle, wire and plug, buffs and tripoli.

Schoff's "handy drilling, reaming, tapping and grinding outfit," as it is styled by its makers, the Stowe Flexible Shaft Co., of Philadelphia, Pa., is perhaps a little more elaborate than the Coates apparatus; in addition to emery and buff wheels and the drill spindle, it also includes a wire scratch brush and a wood auger chuck. It differs from the Coates outfit, too, in that the motor is mounted on a wood base together with the starting and speed controlling rheostat and cut-out switch. As the motor is rated at but ¼ horsepower, it is evident that the outfit is intended only for comparatively light work such as the drilling of small holes in metal and wood, the polishing of brass, light reaming, etc. The usual wiring and lamp socket plug go with the outfit, which is ready for use instantly the plug is inserted in a lamp receptacle.

Push-Button that Operates Hand Horn.

Heretofore it has been the rule that hand-operated, or mechanical, horns must be placed within reach of the driver for the simple reason that the operating lever or crank or whatever it might be usually is mounted directly on the instrument. But due to an ingenious scheme worked out by the Automobile Supply Mfg. Co., of Brooklyn, N. Y., it has been made possible to operate a mechanical horn at a distance—or at any rate, the Motophone horn, made by that company.



MOTOPHONE "PUSH BUTTON" HORN

The horn is placed wherever desired, and a push-button is put in a convenient position for the driver. The connection between the button and the horn is through a Bowden wire, which transmits the "push" of the button to the "works" of the horn, with the desired result—that is to say, the horn is sounded. Before extending the guarantee of two years which goes with the horn and its attachment, the company states that a test was made during which the huge number of 5,000,000 signals were sounded, after which no adjustments were required and no loose parts were observed. The prices of Motophone horns with the Bowden wire control mechanism range from $8, at which price a horn suitable for bicycles and motorcycles is sold, to $15, which is the price of a full sized and full-voiced automobile signal.

Claims an Industructible Gasket.

To take the place of the usual paper gasket, which always causes more or less trouble in the cutting, the Fibre Finishing Co. of Boston, Mass., recently has placed on the market a new fiber material for the purpose which possesses a number of unusual and useful attributes. The material itself is described by the producers as a "material consisting of a closely formed sheet of vegetable fibers treated by a patented process which renders it oil, grease, air and waterproof and exceedingly tough, like leather." In its material aspects, Vellumoid, as it is styled by the makers, is very light in weight and very flexible, though it it is exceedingly tough withal and withstands considerable tearing strain without rupturing; it contains no rubber nor rubber substitute, and is devoid of mineral matter or chemicals, such as sometimes are employed for the purpose of obtaining water and oil-proof material. Vellumoid is stocked in rolls and sheets of the following thicknesses: .008 inch, .010 inch, 0.15 inch, 0.21 inch, .032 inch. It is also supplied as finished gaskets.

Results Obtained with Stellite Tools.

The fact that Elwood Haynes, president of the Haynes Automobile Co., not long ago obtained patents on a non-corroding alloy has made known to the public the existence of the composition, which is called by its inventor "stellite"; it was not known, however, that the metal was in daily use in the factory until Haynes said so at a meeting of the Engineers' Club in Cincinnati.

According to Haynes, "stellite" will do many things that steel will not do, because steel is more sensitive to temperature changes under friction than is the new alloy. And Haynes knows, because in his own factory in Kokomo, Ind., he has been testing the comparative values of steel and "stellite." The particular instance cited is that of a certain drilling operation. With steel drills the best that could be done was 26 pieces a day, which netted the company $1 per day after deducting all costs. By using "stellite," however, production in this detail was increased to from 60 to 70 pieces a day and without any increase in overhead expense the profit on the work of the drilling machine has been increased $6 a day.

May Increase Parcel Post Weight Limit.

Postmaster General Burleson has recommended to the Interstate Commerce Commision that the maximum weight limit of parcel post packages be raised from 20 to 50 pounds for all distances. The law requires that the commission approve of the recommendation, which it is expected to do.

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"SILENT" CHAIN GEARBOXES BUILT SIXTEEN YEARS AGO

Other Facts About Chains Brought Out at Meeting of Metropolitan Section of S. A. E.—Intake Manifolds also Discussed.

That "silent" chains as substitutes for meshing gears in change-speed mechanisms are not altogether modern developments, but are almost as old as "silent" chains themselves; that history is repeating itself in the construction of chains; and that tightening devices should never be used on the backs of "silent" chains are three of the sharp points brought out in a paper read by John R. Gautley on "Roller and Silent Chains; Their History, Manufacture, Design and Use," at a meeting of the Metropolitan Section of the S. A. E. in New York, Friday last, November 26. A paper was also read by Arthur B. Browne on "Intake Manifold Design," in which the fundamentals of the problem of making a manifold of maximum efficiency were clearly set forth and the pitfalls that render the work difficult were uncovered and made plain.

In introducing the subject of chains for power transmission Gautley brought out the importance of protecting chains, and brought it out in no uncertain terms.

"Many engineers have a distinct misconception as to all forms of driving chains," he said. "No roller or silent chain can be compared directly with belting. A driving chain is a piece of fine and highly accurate mechanism and should be treated as such. It will stand an amazing amount of abuse, but if properly installed and cared for it has an efficiency throughout its life which is hard to equal."

"Silent" chains have a considerably shorter history than other forms of transmission chains, having been introduced in 1895. It was only two years later that they were given their first trials for speed-changing service.

"The first 'silent' chain gear box was developed in England by T. W. Hampson in 1897. This was for machine tools and other purposes and included the self-propelled vehicle. In 1898 a silent chain driven gear box was actually fitted to a steam omnibus made by the Lancashire Steam Lurry Co. and this vehicle was put in use by the Dandee Corporation. Both these boxes were all indirect drive. Next came the roller chain gear box on the Brooks car. These, I understand, were fairly successful, but Brooks never made many cars, as his marine work proved more interesting. Finally came the L. G. O. box, which you have all either seen or heard of. Its main difference lay in the fact that it was a box with a direct drive."

Since its introduction in 1895 the "silent" chain has undergone but few changes, and they are changes in detail only.

"The original chain was formed with plain unhardened links assembled on hardened pins, and it is remarkable how some of these chains have worn. The next development was the introduction of a hardened steel bushing into the links to provide a better bearing surface. This again was superseded by a chain made up with link blocks sawn off a form bar, drilled and hardened. Finally came the split bush or liner for larger chains and a return to the circular bushed chains for pitches below 1 inch."

Gautley's remarks on the use and care of chains are interesting, to say the least, in view of his long connection with the chain-making industry and his unusual opportunities for observing the results of chain operation under all sorts of conditions.

"Never use a tightening device on the back of a 'silent' chain. I know of no really satisfactory installations of this character.

"An idler sprocket may be used, but must start with at least three teeth in engagement. This is owing to the difference in gearing with the chain running as a rack, and when running over sprockets.

"If the chain runs over three wheels for any purpose adjustment must be provided. Accuracy of chain and sprockets and mounting is just as necessary with both silent and roller chains as with gears, but this is easier to obtain with chains.

"Adjustment is always advisable for both kinds of chain and is often imperative. Proper cases improve the running of chains. You would not get good results from open gears, so why force the chain to run at a disadvantage?"

In conclusion Gautley maintained that even poorly set up chains would retain their initial efficiency for remarkably long periods, transmitting power with comparatively slight loss until worn out.

In his paper on intake manifold design Browne stated that there were two main problems to be solved. First, each cylinder should receive the same quantity of mixture as the other cylinders; second, the mixture received by all the cylinders should possess the same chemical and physical characteristics. The difficulties of proper design are increased by the lowering of the volatility of the fuel. Pockets where fuel can be deposited and accumulated should be avoided, as well as short curves, which cause excessive friction and deposition of fuel through centrifugal action. Manifolds that are too large in cross section reduce the velocity of the gas and so encourage fuel deposition. Heating the manifold effectually disposes of fuel deposition, and in the absence of heating, according to Browne, the only practical method of securing comparative ease of starting is to so design the manifold that the greatest amount of fuel mist may be delivered to the cylinders, and this entails powerful atomization in the carburetter, because the smaller particles are more easily entrained at low velocities; the least possible manifold diameter consistent with volumetric efficiency at subsequent high speeds, insuring a more thorough entrainment of the fuel mist; smooth interior surfaces, reducing skin friction and absence of enlargements of cross-sectional area, as maintaining the velocity already acquired; and minimum length of manifold passage.

Disapprove Fenders as Bundle Carriers.

If the operators of commercial vehicles in Detroit had known what handy little things truck fenders were they probably would have put them on long before the city compelled their installation; they have been in use but a short time and already the drivers of delivery cars have discovered that the fender is an ideal place to carry a few extra packages when the load is unusually bulky.

Using the fenders for an excess load is but half the story, however, for the city government doesn't intend that the fenders shall be put to any such use. The authorities contend that the fender is designed to save life and that loading it with bundles reduces its efficiency, wherefore the police have ordered all bundles off the fenders.

Poetry, Used Car and Many Aliases.

"Nothing But Leaves," a poem—real or alleged—was part of the evidence in the trial of George L. Lewis, alias several things, in New York City this week on a charge of securing an automobile fraudulently from Mrs. George H. Barrett. He was found guilty. She claimed he paid $100 on her used car and failed to show up with further payments, although he was given possession of the car. The poetry figured in Lewis's story that he became acquainted with the Barretts through their mutual love for poetry and "Nothing But Leaves" was, he said, a product of Mrs. Barrett's which she had sent to him. She expressed her opinion of the situation by tearing up the poem in court.

Lincoln Club Offers Reward for Thieves.

The Lincoln Automobile Club, of Lincoln, Neb., has offered a reward of $50 for information which will lead to the arrest and conviction of any person stealing an automobile; the reward is to be paid by the club's treasurer upon a certificate issued by the county judge.

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SALESMAN A SUPPLYER OF NEEDS, NOT MERE SELLER

Idea of Service to Self, Customer and Employer Essential to True Salesmanship, Says Phelps—Plain Selling Antiquated.

Salesmanship, someone said, is selling goods at a profit, which probably is a fair definition of the term, but that it may be given a less sordid shade of meaning is stated by George H. Phelps, head of the newly organized Phelps Motor Sales Corporation, of New York City. In preaching the doctrine to his fellow Studebaker dealers, Phelps maintains that selling is nothing but supplying needs, and he goes further and declares that the salesman should supply the needs of his employer, the needs of the prospect and that everyone in every walk of life is supplying someone's needs.

"The other day I heard what seemed to me to be a brand new definition of salesmanship," says Phelps. "It went like this: 'The science of salesmanship is the science of supplying needs.' That got a half-nelson on my mind in a second, and I am frank in confessing that nothing I have learned since has taught me to break that hold.

"There was a time, and that wasn't so almighty long ago, when I thought that salesmanship was just the art of selling things. I had a hunch that if I jumped right in and sold cars to every man, woman and child, black and white, pink and yellow, nursing children and tottering oldsters, I would get a laurel wreath placed on my brow and eventually might boss the rest of the fellows.

"It didn't take me long to see that this old, antiquated, moss-grown notion carried with it a lack of confidence in the company. Out there in Detroit they are making somewhere about fifty thousand cars per year. Why? Because they figured that there were fifty thousand persons in the world who needed cars of that particular make, brand and style. Fifty thousand prospective customers who could afford to buy a car of that kind!

"It came to me like a flash that the company might want to stay in business more than a year or two. I could see without a microscope that the only way they could continue in business year after year was through giving each customer absolute satisfaction—by supplying each customer's needs.

"A whole lot of people can sell cars, but it takes brains to sell satisfaction. Once we get the notion into our heads that if we concentrate on thinking about the needs and wants of our customers, they will have more time to spend thinking about the things we want and need.

"If we expect to get the punch into our selling, we must hit the prospective buyer in the eye at the first glance with the blazing truth that what we have to sell is service—that we can supply his needs. We must make him feel that beneath and back of the luster of a matchless exterior is the hard, close-knit and durable quality; that bound up in every polished gearing is the highest efficiency; that what we have to sell is built on honor—the honor of sixty years' growth.

"We must realize that the first rule of the game is fairness. Next to this comes earnestness, and last, though not least, should be manifested the spirit of cooperation: the desire to make sure that the purchaser shall receive what he needs to give him the best service.

"I sometimes think that the salesman is considered simply as a dray to be loaded up with as many 'prospects' as possible and then to be given a shove and a kick and told to go out and sell them—somehow. Brother manager and dealer, I want to tell you that often we are spending too much time crowding our salesmen to bring back the orders, regardless of how they get the business.

"We ought to put reverse English on our methods of supplying the needs of our salesmen. We should not hesitate to study each of his particular problems. We should learn wherein he fails to use the code of successful salesmanship. We should make him feel that failing to sell his quota is personal with him—a personal failure—a failure in service to his firm—a failure to supply your needs. We should show him how, by having a clearly defined program, carried forward in a systematic way, rather than a haphazard, go-as-you-please apology for method, he will multiply his efficiency and greatly increase his sales. Inspire him with the truth that he is selling something not only built by men, but built of men, to be sold to men by a man; that it is a man's proposition, a man's work, this selling of a machine built of wood and steel and character; that he is supplying the needs of his firm—his customers—his own equipment for success.

"Build his inspiration about the shining idea of service, and he'll get moving—then keep him moving."

Two Philadelphia Jobbers Amalgamate.

James E. Baum, formerly of Omaha, who several months ago acquired control of the Supplee Hardware Co., of Philadelphia, has brought about its merger with the Biddle Hardware Co., of the same city. The consolidated company will be styled the Supplee-Biddle Hardware Co. and will be incorporated under the laws of Pennsylvania with an authorized capital of $1,000,000. Both concerns are among the oldest and best known jobbers in the East and the Supplee company, particularly, has dealt with automobile and bicycle accessories. As Baum handled automobile supplies on a considerable scale while in business in Omaha, he is likely to cut a bigger figure than ever in his new enterprise, of which he will be president. The other officers will be as follows: Charles M. Biddle, chairman of the board; Charles M. Biddle, Jr., vice-president; Alfred Klein, vice-president; J. S. Bonbright, vice-president; Robert Biddle, second general manager; E. S. Fogg, treasurer; Edward Knight, secretary; Richard T. Baum, auditor; George S. Spence, assistant secretary and assistant treasurer.

Flyer May Locate in Mount Clemens.

The Flyer Automobile Co., of Detroit, which is to produce a $495 car to be marketed by the Thomas Howard Co., of Brooklyn, N. Y., has practically completed negotiations to locate in Mount Clemens, Mich. The negotiations are being conducted with the Business Men's Association of that city, which will bind itself to supply a factory building, free of rent, before January 1st next. The officers of the Flyer company are Henry W. Campbell, president; George M. Milne, treasurer; A. A. Gloetzer, secretary and general manager.

High Wheel Buggy Maker "Goes Beyond."

Charles H. Stratton, who owned the Stratton Automobile Works in Muncie, Ind., in which was produced a high-wheel buggy, died suddenly in that city Friday last, 28th ult., from the effects of a stroke of paralysis. In addition to his high-wheel buggy, Stratton had invented several other automobile contrivances but, despite the fact, never figured prominently in the industry.

Lyons-Atlas Man Returns from Europe.

Jules Haltenberger, of the engineering staff of the Lyons-Atlas Co., of Indianapolis, returned last week after an extensive tour of Europe. He visited both the Paris and London shows, and also all of the automobile factories producing cars using Knight engines. According to Haltenberger, the American cars were the centers of attraction at both the big shows.

More Room for Johns-Manville in Canada.

The Toronto branch of the Canadian H. W. Johns-Manville Co., Ltd., has been removed to 19 Front street, East, where a new store and warehouse will afford a floor area of approximately 35,000 square feet. In addition to the J-M asbestos products, the branch will also stock the automobile accessories handled by the Johns-Manville Co.

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TYPICAL CYCLECAR DESIGN IN PIONEER $385 MACHINE

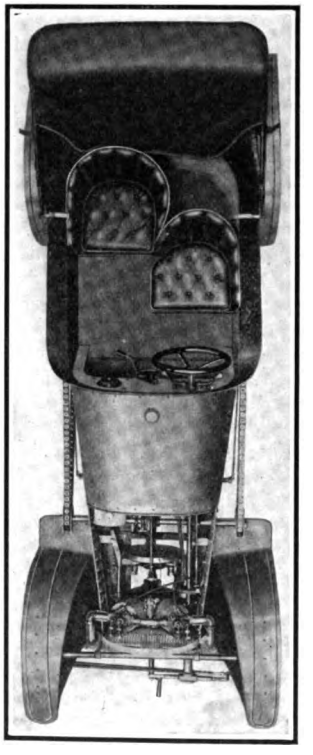
Air-Cooled Motor Drives Through Friction Transmission—Long Belts for Final Drive—Equipment Includes Electric Lights.

For some time past the cyclecar has been more or less sequestered in drafting offices and experimental departments, so far as this country as concerned, and has been heard of a good deal more than it has been seen. Recently, however, it seems to have made some progress in getting from drawing-boards and floor-boards to actual roads and running under its own power, and one of the most recent arrivals upon the highway is the Pioneer Cyclecar, the product of the American Mfg. Co., of Chicago. This little machine, which is said to have passed through the experimental stage, is now ready for demonstration and shortly will be ready for delivery.

None of the characteristics that are considered "de rigeur" for a real cyclecar are missing; the price is $385, the weight is 500 pounds, the tread is 40 inches and the final drive is by long belts. The passenger is almost, but not quite, beside the driver, which means that the second seat is a little back of the first to keep down the width of the body. The wire wheels, which are 28 inches in diameter and have 2½-inch clincher tires, are well mud-guarded. Incidentally, the little machine is well provided for in the way of equipment, low though the price is, a top with side curtains being among the standard fittings.

The entire power plant and change-speed mechanism are grouped under the hood in front; even the mufflers, of which there are two, one for each cylinder of the motor, are in front, outside the hood and low down. The engine is an air-cooled twin, designed for cyclecar service and developing 12-15 horsepower. The cylinders are set at an angle of 45 degrees close to the netting-covered hood opening, with the shaft running fore and aft and driving to a friction wheel on a transverse shaft, the ends of which carry the pulleys for the V-belts, which are of the riveted block type. The motor has a dual ignition system, with a Briggs high-tension magneto. Lubrication is effected by a force-feed system having a mechanically driven piston pump which supplies oil in quantities exactly proportioned to the engine speed. The motor is said to consume a gallon of gasolene for every 35 miles of road covered.

The friction transmission is mounted on ball bearings throughout, so that there is but little bearing friction. The pressure between the friction disk and wheel is automatically controlled. The speed control is so arranged that it is impossible to shift from neutral to any speed without first throwing out the clutch — that is to say, shifting the driven friction wheel away from the driving disk on the crankshaft. There are four forward speeds and one reverse; the speed changing lever is mounted on the dash, together with the throttle and spark levers. The clutching action is under pedal control, and the brakes, which act on the pulleys on the rear wheels, also are pedal-operated.



PIONEER CYCLECAR

The spring suspension consists of two semi-elliptic springs transversely mounted, one at each end of the little car; both axles are held in position by radius rods and both are slightly dropped to keep the center of gravity low. The springs are shackled at both ends to afford the greatest freedom of action. The steering gear is of the rack-and-pinion type and is mounted in front and outside, where it is readily accessible. The wheel is mounted on the left side, in accordance with the modern trend in big car building, and is of ample diameter for the size of the machine.

The horsepower in proportion to weight is high. Figuring on the maximum rated power of the engine—15 horsepower—and allowing 300 pounds for the weight of two passengers, there is one horsepower for every 53 pounds car weight. It is not surprising, then, that the makers claim a maximum speed of 50 miles an hour, and it is reasonably clear that the machine should have no difficulty in getting up almost any sort of grade with both its passengers on board.

So far as equipment is concerned, the Pioneer cyclecar is as well fitted out as many a full-sized automobile. The folding top has a neat boot and a full complement of side curtains for stormy weather. Other items included are windshield, horn, two large headlights of the bullet type, gas or electric, oil-burning tail light and the customary set of tools and tire repair outfit. For starting the motor there is a mechanically operated device that not only is convenient to use, but also leaves the front of the car clean and crankless.

Garage that Proved a Gold Mine.

That a garage should be a gold mine is not impossible, figuratively, but garagemen say it is not probable, yet A. B. Snyder, of Grass Valley, Cal., has a garage which is a gold mine in every sense of the words. He is making money above and below ground, and there is every likelihood that he will make more

Snyder had a paying little business in the middle of Nevada county and was doing so well that he decided last week to put in an underground gasolene storage tank, so press dispatches state. He employed men to sink a hole for the tank and got the equipment ready to hitch up to the receptable when it was completed.

The workmen, who knew something about mining, dug down a few feet and then noticed that the rock they were taking out seemed to contain gold; an investigation revealed the fact that it was real, yellow gold, and Snyder forthwith directed the men to forget about the gasolene tank but to keep on digging, which, needless to say, they did.

Further excavation disclosed a rich ledge of ore underneath the garage, and Snyder is considering giving up the worries of a garage and picking wealth out of the ground. He, however, has a modern, up-to-date little business and, if his discovery causes an influx of prospectors and visitors the "strike" may make his above-ground revenues something not to be despised. Grass Valley has a population of about 5,000 souls.

Milwaukee to Require Truck Fenders.

Milwaukee has fallen into line with Detroit and Chicago in requiring fenders on motor trucks; an ordinance requiring this equipment has been introduced in the Common Council by Alderman W. C. Wehe

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EFFICIENCY EXPERT TELLS HOW TO GET MORE SALARY

Not the Undone Things but the Poorly Done Tasks That Hold the Worker Down—Urges Cooperative Effort and Real Interest.

"How to raise my salary" is a vital question with everyone. Maybe it sometimes is what may be called income instead of salary, but those who do not want more money than they now have are few.

Especially is this true with the man whose income is a "salary." He wants more, and he knows that to get more he must earn more, but just how to do it is the problem. There are many things—most of them apparently little things—which have to do with this question, according to J. W. Amrath, a western efficiency engineer, who discusses the matter in the current number of the Bulletin of the National Retail Dry Goods Association.

Amrath aimed primarily at store clerks, but he hit a far wider mark, and if his advice were taken by workers in every trade and adapted to meet existing conditions it might go far to solve that vexing question.

Things Poorly Done Tip Balance.

"It may surprise you to realize that it is not the things undone, but the things done and done poorly, which tip the balance toward inefficiency," said Amrath. "Perhaps you do not stop to think that it is only a question of doing your work more carefully, by giving attention to little things. You ought to realize that by care and attention you can make any customer a permanent customer, double the sales, and increase your wages. Here is something to think about.

"Remember that everything you do in the store, and outside of it, for that matter, has some influence on making a customer decide either to come again or go elsewhere to trade. The size of the pay envelope depends upon this decision, and the satisfaction you give to the customer depends upon your attention to all the seemingly little things in the daily routine.

"You may feel that your home life and your free time have nothing to do with your duties at the store. You may feel that it is your own affair as to what you read or how long you dance, or whether you conduct yourselves in an orderly manner—and so it is. Yet you ought to use every minute of your time to benefit and to advance yourselves. If you are disorderly in your habits at home you will be disorderly and inattentive at the store. If you stay out late at night habitually you cannot work efficiently. If you do not read good books you cannot learn the good things that advance your thoughts, and so advance you.

"When you try to think how you can lighten the work of others by working with them you will lessen your own task and find it a pleasure instead of a burden. By right thinking you can brighten your future, the future of others, and the community in which you live. Remember that mistakes and misfortunes are the result of wrong thinking. If you do things because you have to, instead of because you want to for your own sake, you will find the store routine irksome and harsh. It is because you do not understand that store routine is nothing but service to yourselves by service to the customer. It is because you fail to see that the satisfied customer pays your wages; that your service to the customer regulates your living.

Efficiency of One Affects the Whole.

"Some of you seem to have failed to appreciate heretofore that the efficiency of any one of you is increased or decreased according to the degree of efficiency of the rest. Boys and girls enter business without an adequate realization that on their individual action depends in a great measure the success of their employer. Do you realize that the success of this concern is the very means of paying your compensation, and that it is gauged accordingly? Do you realize that keeping your minds on your present work is the basis of your own success in the future?

"The better use you make of your time and the less you idle, the more the wages will be. When you loiter you are thieving from yourselves and one another. When you waste five minutes here and ten there and think nothing of it, you are putting your hands into your own and one another's pay envelope, because the store expense becomes greater than it ought to be. You may think that you have cleverly cheated your employer, but you have really cheated yourselves out of pay and increased opportunity.

Employer Does Not Pay for Failings.

"The employer does not pay for your failings if he can help it. He saddles your shortcomings on yourselves in smaller wages than he would pay if you were more efficient. You will be surprised to know that measuring tests in certain stores disclosed overmeasurements in cutting that amounted to thousands of dollars.

"You must realize that when numbers of people are banded together, it is necessary, for the comfort of all, to observe certain regulations. For instance, the office, which is your servant in keeping your pay roll records, must be in some way informed of your presence. This information should be given in the shortest and cheapest manner, cheapest because the size of the expense account affects your wages. If the store had to employ clerks to keep your time there would be more clerks earning wages, but each person's wages would be less. Now, the shortest and cheapest way to let the office know that you are present is the time clock. When your time record shows you frequently behind time without good reason. It also shows that your mind is not on your work, and that you are not helping yourselves as much as you ought. When you are not on time, your work is left for some one else to do until you come, which often means that the work is undone. Thus you may upset the entire day's routine. When you fail to punch your time, or punch another number than your own, some one has to straighten out your mistake. When you try to deceive the house by punching for some one else, you lower the standard of honor among the whole force, causing it to pay indirectly for that person's time.

Why Employer Helps the Employed.

"During the past year the house has doubtless expended a good many dollars in improvements. Do you know why this great amount was put back into the business instead of being paid out to the stockholders in dividends? It is because the house realized that it owed a dividend to you and to the customer. It is because it has become plainly understood in recent years that the employer incurs a responsibility toward his employes, which he must discharge by helping with all his might to provide better living, working, and educational conditions.

"There is no good reason, since a clear understanding has been given to the house and to you of the common interest relations of employer and employe, why both sides should not benefit. There is no good reason why the earnings of both should not be doubled. It rests with yourselves, with the vim and enthusiasm you put into your work. It is not more labor, but efficient labor, that is required. You will find your wages regulated automatically and absolutely by the efforts and the earnestness which you put into your work.

"If we all try to conserve a part of the enormous waste caused by indifference to our daily pursuit, we will then turn the most effective weapon we have on the high cost of living. We will have greater comforts, derived from greater earnings, and great content from tasks well done. Then let us resolve, each of us, to enlist with hearty cooperation under the flag of 'Efficiency.'"

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1,066,313. Pneumatic Shock Absorber. Lloyd E. Parrott, Topinabee, Mich. Filed Oct. 16, 1912. Serial No. 726,071. (Combination of cylinder-and-piston, levers and springs.) 2 claims.

1,066,368. Automobile Tire. Joseph A. Bethea, Brewton, Ala. Filed Jan. 11, 1913. Serial No. 741,523. (Springs between inner and outer rims.) 1 claim.

1,066,378. Resilient Vehicle Running Gear. William H. Browning, New York, N. Y. Filed Aug. 28, 1911. Serial No. 646,447. (Lever and spring suspension system.) 1 claim.

1,066,407. Shock Absorber. Joseph E. Gorsuch, Roaring Spring, Pa. Filed Oct. 9, 1911. Serial No. 653,553. (Auxiliary spring device.) 1 claim.

1,066,425. Universal Joint. Everett Betts, Detroit, Mich. Filed May 20, 1912. Serial No. 698,362. (Ball-bearing universal joint.) 2 claims.

1,066,424. Automatic Starting Device for Explosive Engines. Joseph P. Smithers, Brooklyn, N. Y.; Herbert Smithers and Walter Smithers, executors of said Joseph P. Smithers, deceased. Filed Jan. 28, 1909, Serial No. 474,762. Renewed Nov. 6, 1911. Serial No. 6588,75. (Spring starter.) 26 claims.

1,066,438. Automobile Sledge. Edmond Augustin Remezy, L'Isle-sur-Sorgue, France. Filed Aug. 28, 1911. Serial No. 646,540. (Automobile sleigh with screw propeller.) 5 claims.

1,066,453. Make-and-Break Sparking Device for Engines. Leslie Calwell Adams, Pentanguishene, Ontario, Canada. Filed Apr. 10, 1912. Serial No. 689,839. (Make-and-break igniter with adjusting device.) 4 claims.

1,066,472. Frictional Transmission Mechanism. Birge W. Davenport, Minneapolis, Minn., assignor to Ditpatch Motor Car Company, Minneapolis, Minn., a Corporation of South Dakota. Filed Nov. 29, 1911. Serial No. 663,113. (Three-disk friction transmission.) 4 claims.

1,066,508. Shock Absorber. Jacob William Lattig, Glenside, Pa. Filed Nov. 18, 1912. Serial No. 731,933. (Auxiliary spring shock absorber.) 6 claims.

1,066,539. Lock for Automobile Clutch Levers. George P. Smith, St. Louis, Mo., assignor of one-half to William H. Sturges, St. Louis, Mo. Filed Oct. 10, 1912. Serial No. 724,995. (Clutch lock set by foot plunger and released by key.) 6 claims.

1,066,564. Combustion Engine. Albert Winnier, Dorchester, Mass. Filed Mar. 22, 1911. Serial No. 616,189. (Motor with sliding valves.) 4 claims.

1,066,584. Steering Post Support. De Witt C. Cookingham and John H. Hertner, Cleveland, Ohio, assignors to The Rauch and Lang Carriage Company, Cleveland, Ohio, a Corporation of Ohio. Filed Oct. 20, 1910. Serial No. 588,036. (Bearing for steering shaft.) 2 claims.

1,066,593. Valve for Internal Combustion Engines. Ward Z. Flower, Gibbon, Minn. Filed Jan. 12, 1912. Serial No. 670,813. (Rotary disk valve.) 2 claims.

1,066,602. Vehicle Spring. Clarence Seymour Green and Alfred Connors, Maricopa, Cal. Filed Dec. 20, 1911. Serial No. 667,027. (Leaf spring system.) 2 claims.

1,066,649. Starting Device for Automobiles. Harry Parker, Cullman, Ala. Filed Apr. 22, 1912. Serial No. 692,451. (Air starting system.) 5 claims.

1,066,666. Steerable Driving Wheel. Ray E. Shaffer, Columbus, Ohio. Filed Nov. 13, 1911. Serial No. 660,040. (Universal joint in line with steering knuckle pivot.) 3 claims.

1,067,239. Guard for Tires. Alonzo W. Crain, Petroleum, Ind. Filed Aug. 26, 1912. Serial No. 717,116. (Brushes to sweep ground ahead of tires.) 1 claim.

1,067,256. Vehicle Battery-Box Construction. Harold H. Kennedy, Indianapolis, Ind., assignor to The Waverly Co., Indianapolis, Ind., a corporation of Indiana. Filed Aug. 12, 1912. Serial No. 714,717. (Hood used as battery box in electric vehicle.) 3 claims.

1,067,257. Means for Starting Internal-Combustion Engines. Arthur Douglas Kenyon and Emerson Delos Thayer, Denver, Col. Filed Oct. 5, 1911. Serial No. 652,900. (Pull starter with ratchet and cable winding on spiral drum.) 1 claim.

1,067,258. Internal Combustion Engine. Simon Lake, Milford, Conn. Filed March 21, 1911. Serial No. 615,991. (Heavy oil engine.) 17 claims.

1,067,275. Igniter for Internal-Combustion Engines. Malcolm P. Ryder, Springfield, Mass. Filed June 23, 1910. Serial No. 568,467. (Magnetic igniter with hammer break.) 5 claims.

1,067,286. Rotary Valve for Explosive Engines. Rolland S. Trott, Denver, Col. Filed July 19, 1909. Serial No. 508,414. (Ports in hollow crankshaft.) 2 claims.

1,067,317. Speed-Controller for Motor-Vehicles. Joseph Coplon, Buffalo, N. Y. Filed July 11, 1912. Serial No. 708,928. (Throttle control electrically operated from speedometer.) 6 claims.

1,067,334. Double-Ended Gas-Engine. Orlen Hardy, Raymond, Cal. Filed July 29, 1912. Serial No. 711,977. (Explosion chamber between two oppositely moving pistons.) 2 claims.

1,067,349. Spring Wheel. Elmer E. Kerns, Bradford, Pa. Filed April 25, 1912. Serial No. 693,100. (Springs between tire and rim.) 2 claims.

1,067,361. Wheel Tire. Thomas Midgley, Hartford, Conn., assignor to The Hartford Rubber Works Co., a corporation of Connecticut. Filed Sept. 11, 1906. Serial No. 334,105. (Tire with net-like metal band in base.) 4 claims.

1,067,386. Vehicle Wheel. John J. Van Iderstine, Kansas City, Mo. Filed Jan. 2, 1912. Serial No. 668,848. (Springs between rubber tread and wheel rim.) 1 claim.

1,067,408. Variable-Speed Friction Gearing. Edward P. Cowles, Warren, Ohio. Filed Feb. 21, 1903, Serial No. 144,522. Renewed May 26, 1913. Serial No. 770,057. (Disk-shifting device in friction transmission.) 29 claims.

1,067,424. Fuel-Pump for Internal-Combustion Engines. Lawrence C. Hamke, Carlisle, Ind. Filed July 6, 1912. Serial No. 708,075. (Fuel pump with centrifugal governor control.) 2 claims.

1,067,430. Wheel. Thomas B. Jeffery, Kenosha, Wis.; Kate E. Jeffery, Charles T. Jeffery, and Harold W. Jeffery executors of said Thomas B. Jeffery, deceased. Filed Oct. 22, 1908. Serial No. 458,491. (Double wheel.) 4 claims .

1,067,439. Cushion Wheel and Pump Therefor. William L. Olmstead, Redlands, Cal. Filed Dec. 14, 1910. Serial No. 597,234. (Wheel with pneumatic cylinder cushions.) 1 claim.

1,067,441. Power-Transmitter. Frank Monroe Prather, Los Angeles, Cal. Original application filed April 12, 1911, Serial No. 620,692. Divided and this application filed April 30, 1912. Serial No. 694,282. (Pneumatic transmission system.) 2 claims.

1,067,444. Shock-Absorber. Thos. F. Scott, Everett, Mass. Filed Aug. 9, 1912. Serial No. 714,200. (Cylinder-and-piston shock absorber.) 5 claims.

1,067,467. Muffler for Engines. Patrick J. Collins, Philadelphia, Pa., assignor, by direct and mesne assignments, to American Silencer Co., Philadelphia, Pa., a corporation of Delaware. Filed Dec. 21, 1912. Serial No. 738,088. (Muffler with concentric corrugated baffles.) 7 claims.

1,067,468. Muffler. Patrick J. Collins, Philadelphia, Pa., assignor to American Silencer Co., Philadelphia, Pa., a corporation of Delaware. Filed April 16, 1913. Serial No. 761,522. (Muffler with transverse baffles.) 6 claims.

1,067,480. Vehicle-Spring. Thomas A. Hoover, Fresno, Cal. Filed Jan. 24, 1912. Serial No. 673,139. (Locking device for spring clips.) 6 claims.

1,067,487. Variable-Speed Power-Transmission Device. Ferdinand Pfeifer, Springfield, Ohio. Filed Dec. 19, 1910. Serial No. 598,166. (Fluid pressure control of driving gears.) 5 claims.

1,067,507. Anti-Skidding Vehicle Wheel Tire. Mark A. Decs, Pascagoula, Miss., and Thomas M. Dees, Midlothian, Tex., assignors to American Tire Co. St. Louis, Mo., a corporation of Missouri. Filed March 23, 1911. Serial No. 616,341. (Tire tread with projecting rubber bars and leather band with openings through which bars protrude.) 3 claims.

1,067,525. Wheel for Vehicles. Walter C Kruke, Corning, N. Y. Filed Nov. 13, 1911. Serial No. 660,123. (Coiled springs in channeled spokes. 12 claims.

1,067,555. Explosive-Turbine. John F. Sandell, Chicago, Ill. Filed Jan. 3, 1911. Serial No. 600,380. (Turbine with separate compression chambers and cut-off actuated by rotor periphery.) 15 claims.

1,067,558. Pneumatic Tire for Vehicle Wheels. Jacques Steinberg, Paris, France. Filed Feb. 9, 1911. Serial No. 607,627. (Tire in which beads normally draw together when tire is deflated.) 1 claim.

1,067,563. Armored Tire. Allen G. Wagner, Akron, Ohio. Filed Jan. 22, 1913. Serial No. 743,601. (Screwed-in studs.) 1 claim.

1,067,657. Engine-Cranking Device. Oliver T. Isaacson, Champaign, Ill. Filed July 29, 1912. Serial No. 711,981. (Spring starter.) 8 claims.

1,067,666. Valve-Gear for Multicylinder Internal-Combustion Engines. Joseph Valentin Laviolette, Amsterdam, Netherlands, assignor to Industriele Maatschappij Trompenburg, Amsterdam, Netherlands. Filed June 10, 1911. Serial No. 632,419. (Valve actuating mechanism with transverse shaft.) 4 claims.

1,067,668. Resilient Tire. Harry McCleary, Washington, D. C. Filed March 29, 1912. Serial No. 687,072. (Tire with two parallel air chambers.) 10 claims.

1,067,700. Driving Gear for Speedometers. Augustus W. Wessoleck, New Britain, Conn., assignor to the American Hardware Corporation, New Britain, Conn., a corporation of Connecticut. Filed Nov. 14, 1912. Serial No. 731,270. (Split gear.) 3 claims.

1,067,707. Back-Stop for Vehicles. James Harrison Adams, Taft, Cal., assignor of one-half to Wm. O. Clay, Taft, Cal. Filed June 4, 1912. Serial No. 701,541. (Ratchet sprag.) 4 claims.

1,067,710. Protecting Device for Automobiles. Fridolf F. Backstrom, Chicago, Ill. Filed Nov. 9, 1912. Serial No. 730,355. (Combined bumper and spring fender.) 8 claims.

1,067,726. Automobile Tire. Henry P. Fooque, New York, N. Y. Filed June 21, 1912. Serial No. 705,002. (Spring tire with rubber tread.) 3 claims.

1,067,737. Radiator-Support for Motor Vehicles. Russell Huff, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed July 30, 1910. Serial No. 574,733. (Universal joint radiator support.) 1 claim.

1,067,744. Demountable Rim. William Joseph Lane, Youngstown, Ohio. Filed Aug. 21, 1912. Serial No. 716,177. (Solid tire with beveled rim and wedge fasteners.) 1 claim.

1,067,751. Spring-Axle. Starl Nottingham, New Hudson, N. Y. Filed Oct. 16, 1912. Serial No. 725,057. (Wheels running on stub axles connected to main axle through links and springs.) 1 claim.

1,067,770. Two-Stage Compression-Pump. Gregory John Spohrer, Franklin, Pa., assignor to Wilson Motor Starter Co., Franklin, Pa. Filed March 9, 1912. Serial No. 682,583. (Compound air pump.) 3 claims.

1,067,779. Car Fender. Eugene Bonnyakovits, Cleveland, Ohio. Filed Dec. 27, 1912. Serial No. 738,877. (Fender with automatic trip for front of car.) 7 claims.

1,067,793. Automobile-Goggles. John U. Barr, New York, N. Y. Filed Oct. 20, 1911. Serial No. 655,668. (Goggles with glasses of unequal densities in different parts.) 1 claim.

1,067,794. Tire-Pump. Thomas K. Begg and Arthur H. Moore, Bridgeport, Conn., assignors to The Bridgeport Brass Co., Bridgeport, Conn., a corporation of Connecticut. Filed June 25, 1910. Serial No. 568,911. (Compound hand-operated tire pump.) 4 claims.

1,067,844. Open-Bellied Pneumatic-Tire Shoe. Chas. S. Scott, Cadiz, Ohio. Filed March 7, 1910. Serial No. 547,719. (Tire shoe with layers of fabric sewn together with quilting stitches.) 1 claim.

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National

Buy Service, Not Specifications

OUR Policy makes it possible to buy a National car as you do a reliable Watch, or a high-grade Piano. You want a watch to give accurate Time, and a piano because of its Quality. In other words, you buy a Watch and a Piano for Results—and not because of the particular individual parts that enter into their construction. You leave that to the makers.

OUR ambition is Quality. We take the responsibility for what enters into the car's makeup, while you need think only of its Performance.

JUDGE the National by what it can actually Do; how adequately and comfortably it Performs; **and** the Longevity of its efficient Service.

WE offer you a Whole Car where every mechanical part operates harmoniously to produce a Unit of satisfactory Results.

SPECIFICATIONS alone are misleading. An inferior car may have similar specifications, or similar parts to a quality car.

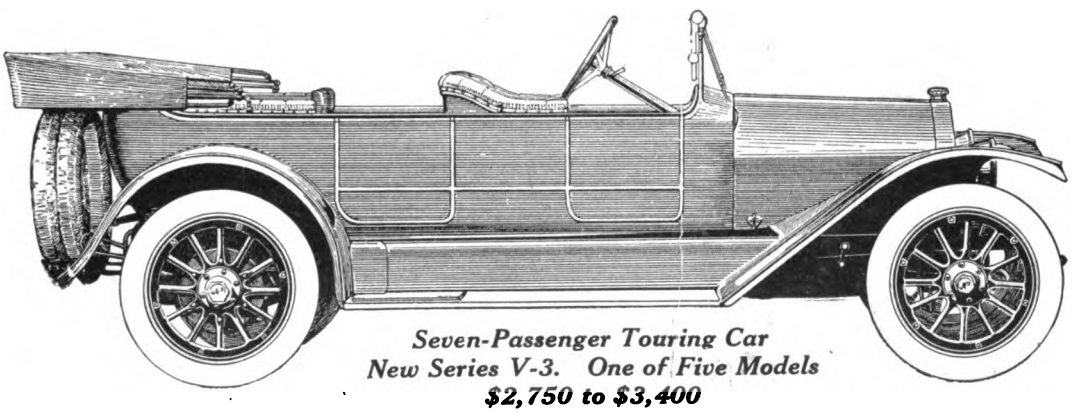
WE put the Right material in the Right place. Our experts devote their lives to this Duty. We take that Responsibility. You enjoy the Results.

WE give you a car you can buy without having to raise the hood to investigate; without worrying about its Insides and without bothering to make a detailed analysis of its various component Parts or Specifications.

ONLY a company of unimpeachable reputation, of sound financial standing, of reliability built upon years of success can make you this most Liberal Offer ever made by any automobile builder.

SERVICE, with us, begins when the car is built. Service is put into your car. This is why the National requires the least attention afterwards.

AND freedom from faults and complete abandon of worry about the mechanical operations taking place beneath your seat, can not be bought for less than the National.



Seven-Passenger Touring Car
New Series V-3. One of Five Models
$2,750 to $3,400

National Motor Vehicle Co.

INDIANAPOLIS, INDIANA

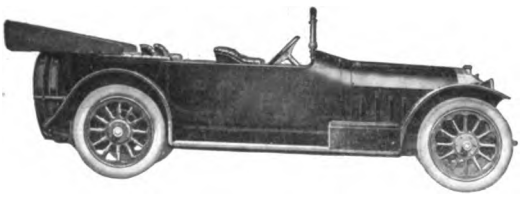
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Used Pathfinders In Demand

PATHFINDER

A Used car Department for buying and selling second-hand Pathfinder motor cars is announced. Correspondence is solicited with present owners who intend to buy new models and with prospective owners who want the Pathfinder Economy and Long Life Features at slightly lower cost.

Pathfinder cars have a large resale value because of renewable bearings and scientific chassis construction. Read up on the chassis by getting a copy of our "101 Reasons." Write—we'll send it by return mail.



Pathfinder body designs are generally described as "Beautiful" Learn why by writing for our art catalog and "101 Reasons."

MOTOR CAR MFG. CO., 1138 Division St., INDIANAPOLIS, USA

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Storage Batteries Insure the Efficiency of Starting and Lighting Systems

The best electric equipment made would be worth but a few cents a pound without a dependable Storage Battery.

And, today, the car not equipped with electric starting and lighting is a back number.

To insure the utmost efficiency for their car owners, the L B A Storage Battery is furnished by the following manufacturers:

Adams-Bagnall Electric Co.....Cleveland, O.	Hartford Suspension Co.....Jersey City, N. J.
Adams & Westlake Co.....Chicago, Ill.	Holtzer-Cabot Electric Co.....Brookline, Mass.
Bailey Electric Co.....Grand Rapids, Mich.	Ide Engine Co.....Springfield, Ill.
Bijur Motor Lighting Co.....Hoboken, N. J.	Ignition Starter Co.....Detroit, Mich.
Briggs Magneto Co.....Elkhart, Ind	Jones Electric Starter Co.....Chicago, Ill.
Dayton-Dick Co.....Quincy, Ill.	Kemco Elec. Mfg. Co.....Cleveland, O.
Dean Electric Co.....Elyria, O.	Leece-Neville Co.....Cleveland, O.
Detroit Electric Appliance Co.....Detroit, Mich.	National Coil Co.....Lansing, Mich.
Diehl Mfg. Co.....Elizabethtown, N. J.	North-East Electric Co.....Rochester, N. Y.
Dyneto Electric Co.....Syracuse, N. Y.	Northwestern Mfg. Co.....Milwaukee, Wis.
Economy Mfg. Co.....York, Pa.	Remy Electric Co.....Anderson, Ind.
Electric Auto-Lite Co.....Toledo, O.	Rushmore Dynamo Works.....Plainfield, N. J.
Electro Light & Starter Co.....Indianapolis, Ind.	Splitdorf Electric Co.....Newark, N. J.
Emerson Electric Co.....St. Louis, Mo.	Wagner Electric Mfg. Co.....St. Louis, Mo.
Esterline Co.....Indianapolis, Ind.	Ward Leonard Electric Co.....Bronxville, N. Y.
Fisher Electrical Works.....Detroit, Mich.	R. C. Wells Mfg. Co.....Fond du Lac, Wis.
Gray & Davis.....Boston, Mass.	Westinghouse Elec. & Mfg. Co.....East Pittsburgh, Pa.

Count Them

and you'll see the L B A is the choice of the big majority.

Some of the VERY FEW manufacturers not in this list try to "put it over" on their customers by furnishing an imitation battery claimed to be "just as good" as the L B A.

Your electrical equipment is a highly important part of your car—on its successful operation depends your pleasure, your actual use of the car.

You cannot afford to buy a car whose manufacturers are willing to let you take a chance with any other battery than the L B A.

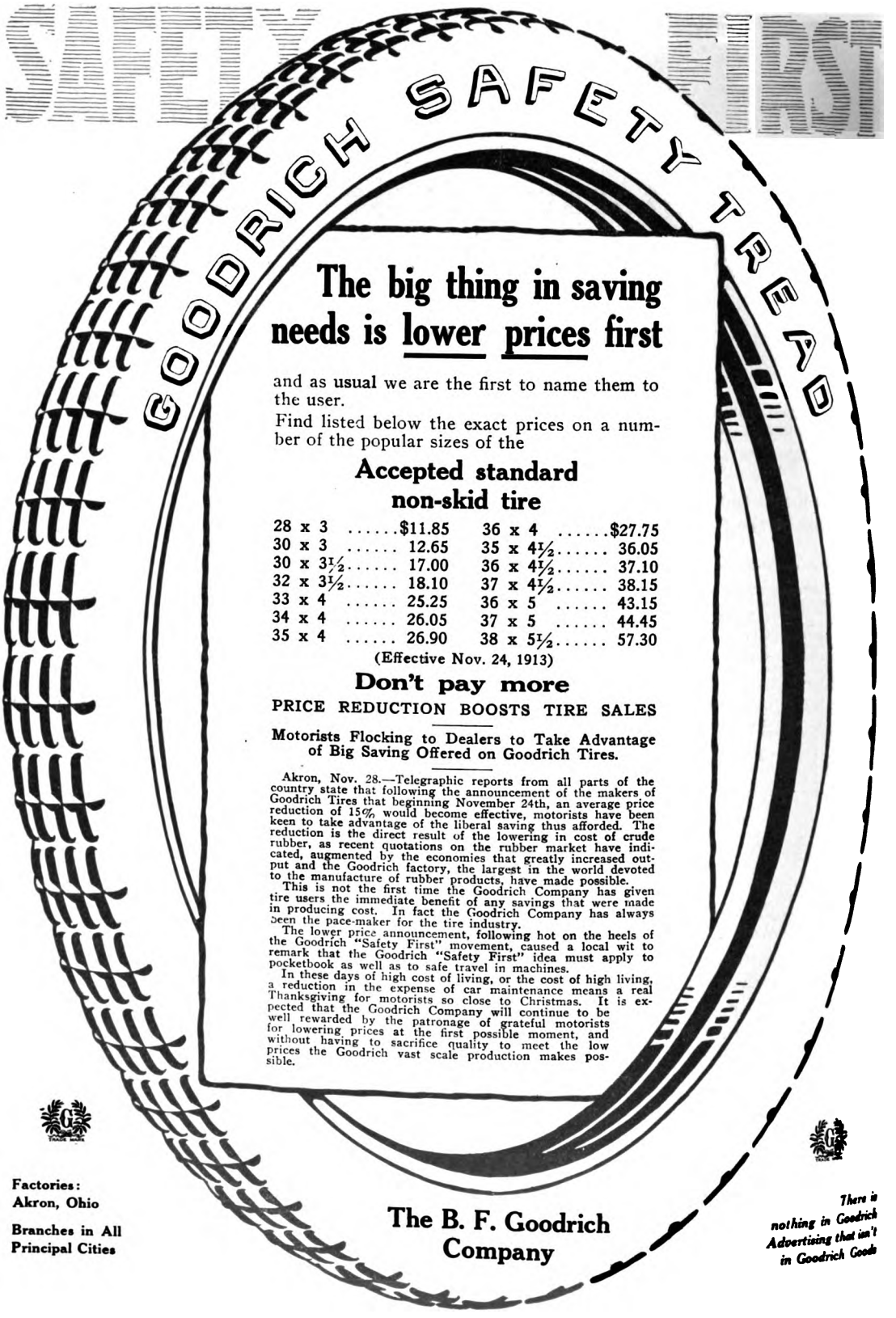
Five L B A Branches, factory owned and operated and 150 real Service Stations in the United States stand ready to assist you in time of need.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 136 W. 52nd Street.
Chicago Branch: 2241 Michigan Avenue.
Detroit Branch: 1191 Woodward Avenue.
San Francisco Branch: 243 Monadnock Building.
Indianapolis Branch: 438 and 439 Indiana Pythian Building.

(75

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The big thing in saving needs is lower prices first

and as usual we are the first to name them to the user.

Find listed below the exact prices on a number of the popular sizes of the

Accepted standard non-skid tire

28 x 3	$11.85	36 x 4	$27.75
30 x 3	12.65	35 x 4½	36.05
30 x 3½	17.00	36 x 4½	37.10
32 x 3½	18.10	37 x 4½	38.15
33 x 4	25.25	36 x 5	43.15
34 x 4	26.05	37 x 5	44.45
35 x 4	26.90	38 x 5½	57.30

(Effective Nov. 24, 1913)

Don't pay more

PRICE REDUCTION BOOSTS TIRE SALES

Motorists Flocking to Dealers to Take Advantage of Big Saving Offered on Goodrich Tires.

Akron, Nov. 28.—Telegraphic reports from all parts of the country state that following the announcement of the makers of Goodrich Tires that beginning November 24th, an average price reduction of 15% would become effective, motorists have been keen to take advantage of the liberal saving thus afforded. The reduction is the direct result of the lowering in cost of crude rubber, as recent quotations on the rubber market have indicated, augmented by the economies that greatly increased output and the Goodrich factory, the largest in the world devoted to the manufacture of rubber products, have made possible.

This is not the first time the Goodrich Company has given tire users the immediate benefit of any savings that were made in producing cost. In fact the Goodrich Company has always been the pace-maker for the tire industry.

The lower price announcement, following hot on the heels of the Goodrich "Safety First" movement, caused a local wit to remark that the Goodrich "Safety First" idea must apply to pocketbook as well as to safe travel in machines.

In these days of high cost of living, or the cost of high living, a reduction in the expense of car maintenance means a real Thanksgiving for motorists so close to Christmas. It is expected that the Goodrich Company will continue to be well rewarded by the patronage of grateful motorists for lowering prices at the first possible moment, and without having to sacrifice quality to meet the low prices the Goodrich vast scale production makes possible.

Factories:
Akron, Ohio

Branches in All Principal Cities

The B. F. Goodrich Company

There is nothing in Goodrich Advertising that isn't in Goodrich Goods

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Look for the Gilt Edge!

The Sign of AMBESCO *Brake Lining*

Gilt Edge in All the Name Implies

In order to make the identification of Ambesco sure and easy, we have decided to gild the edges as indicated in the cut above on all Ambesco Brake Lining shipped from our factory hereafter.

To the casual observer most brake linings look alike. So to protect our customers against substitution and to insure their getting the real high grade article rather than inferior articles which look just like Ambesco, we have gone to this additional expense. Hereafter be sure that the Ambesco which you sell not only is stamped with our trade mark but that the edges are gilded. Remember that Ambesco is manufactured practically from the raw material to the finished product within our walls, and that it is the cheapest high quality brake lining on the market.

Also bear in mind the point that we made in our last advertisement that we will help you dealers and jobbers carry a complete stock of Ambesco. If you have not already done so, get in touch with us for this special proposition which insures the widest possible distribution of Ambesco Brake Lining throughout the country. Remember, we will not only help you carry the stock but we will help you sell it. Write today.

AMERICAN ASBESTOS COMPANY, Norristown, Pa.

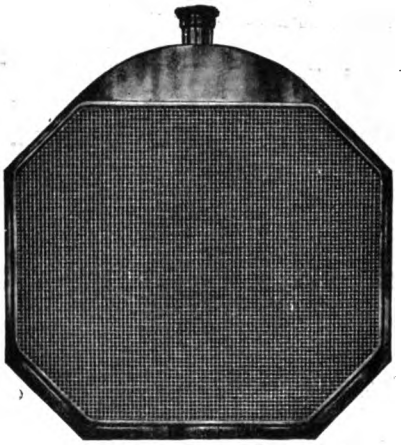
Dealers and manufacturers both--- of Asbestos Friction Discs for Multi Clutch Facing for

remember we are manufacturers also ple Disc Clutches---a l s o Asbestos Cone Clutches.



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MAYO RADIATORS



We believe the time not inopportune to state that those concerns which have been using Mayo Radiators as standard equipment for years are today, as a class, the best in the automobile industry. They have used the same good judgment in the general conduct of their business as they have in the selection of their radiator equipment.

MAYO RADIATOR COMPANY
New Haven, Connecticut

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A·R·MOSLER & Co's SPARK PLUG PATENTS SUSTAINED

The United States Court of Appeals Upholds the Canfield Basic Patent

¶ The Canfield Patent, which we own, covers practically every brand of spark plug made and marketed today.

¶ Since the Court of Appeals confirmed the validity of this patent we have given a great deal of thought and consideration to the future of this business as our ownership of this patent may affect it.

¶ The keynote of our policy and attitude with respect to the manufacturers and dealers in spark plugs is detailed on the following pages.

Read A·R·Mosler's own story on following pages

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Mosler Spit Fire Plugs

The Spark Plug Situation

THE sustaining of the Canfield Patent through the efforts of our counsel, Mr. William A. Redding and its resulting effect on the trade necessitates at this time an explanation and a statement from us.

Ever since we have been engaged in the manufacture of spark plugs we have adhered to one principle upon which to build them. Our motto has always been "QUALITY," "WORKMANSHIP" and "MATERIAL" and the best was none too good.

The development of the SPIT-FIRE closed end and the TRIUMPH open end, of the CONICAL of our MOSLER JUNIOR and last but not least our VESUVIUS plugs, has convinced us that the correct principle and design which we have adopted were absolutely indispensable to the perfect construction of the right type of spark plug.

It was not long before we were advised of the existence of the Canfield Patent and after a most careful investigation, concluded that it was necessary to protect ourselves thereunder.

We have always believed and contended that the Canfield Patent was valid. This belief was not shared by any other spark plug manufacturer. As soon as we could secure the ownership of the Canfield Patent we put this validity to a test. It was a bitter fight.

Our opponents won in the lower courts but in the recent decision the United States Circuit Court of Appeals rendered an opinion vindicating Mr. Redding's judgment completely.

This decision practically vests in us and our licensees the control of the spark plug industry, as practically all spark plugs today are made with their recess deeper than its width, because it gives the results claimed by Canfield. But we are not going to abuse our position. Our policy will be broad and un-

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Mosler Spit Fire Plugs

selfish, but in return we expect the co-operation of every legitimate manufacturer of spark plugs.

We are perfectly willing to take our chances in getting our share of the spark plug business on the virtue and the merit of our product. But we will also be vigorous in protecting our rights under the recent decision.

This, broadly, will be the governing policies of the affairs of our Company. All Spark Plug manufacturers should appreciate our position in view of the new condition which results from the decision of the Circuit Court of Appeals.

The Spark Plug business is not a grab. It is one of the basic units of the automobile industry. The performance of a car depends to such an extent upon the perfection of its ignition system that we cannot afford to slight a single detail. The parts maker has a moral responsibility to produce efficient goods and those who sell or are in any way connected with the marketing of such goods have the same moral responsibility of keeping the spark plug portion of the industry on a businesslike plane.

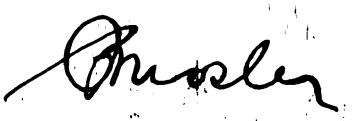
There is room for every maker of good spark plugs in the industry. The maker of an inferior product will sooner or later find that his goods cannot compete with the more meritorious spark plugs.

Our attitude is one of "live and let live" and we will be the last to use the power with which the Canfield Patents have invested us for anything except to stimulate business-like co-operation on the part of all.

It gives us pleasure finally to state that licenses have been granted to the following spark plug manufacturers.

A. R. Mosler & Co.
Auburn Ignition Co.
Benford Mfg. Co.
Champion Ignition Co.
Champion Spark Plug Co.
Frontier Specialty Co.
Hartford Machine Screw Co.
Jeffery-Dewitt Co.
C. A. Metzger, Inc.
N. Y. Mica & Mfg. Co.
Rajah Auto Supply Co.
The Silvex Co.

A. R. Mosler & Co.



President

Date Dec. 3, 1913

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GENUINE

Mosler Spit Fire Plugs



MANUFACTURED UNDER THE BASIC PATENTS

FOR PROTECTION INSIST UPON THE **RED** TAG

Mosler Vesuvius Plug



A·R·MOSLER & Co
P.O.BOX "M"
MT. VERNON, N.Y.

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ngs That ıst Your Car

Cleveland-Canton Automobile Springs

That make the car itself last longer, that give you the utmost in service and satisfaction to the last day you use them.

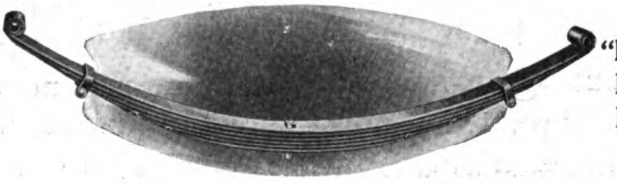
Cleveland - Canton Chrome - Vanadium Springs are unique, because they not only wear amazingly, but add immeasurably to the life of the car, as well.

They mean a smooth-running engine, a protection against sudden shocks and jars, increased comfort to the occupants, **real** pleasure and profit in motoring.

The most drastic conditions leave this spring unaffected. Where ordinary springs lose life, the properties of Cleveland-Canton Chrome-Vanadium Springs remain as resilient, as elastic, as "springy" as ever.

Cross-Rolled Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

The reason for this amazing superiority is the way these springs are made.

First, we use Chrome-Vanadium steel, a material infinitely stronger, tougher than ordinary carbon steel.

Then we **cross-roll** it. And this means that instead of rolling it longitudinally only, we roll it both longitudinally and transversely. The metal is knit tightly together. There are no blow-holes, no flaws, no defects.

Instead of flashing in oil, we temper these springs by a special process—heat-treating them carefully.

And all of this care in making means that in five years not ONE Cleveland-Canton Chrome-Vanadium Spring was returned because of breakage or settling. Specify Cleveland-Canton Springs on your next cars.

Best Grade—Chrome-Vanadium
Next Best—Special Analysis

The Cleveland-Canton Spring Co.

Canton, Ohio, U. S. A.

VELAND MARK
NTON

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Stimulate Your Trade By Selling The Tube That Time Has Stamped "The Best"

WHEREVER Dealers handle Fisk Pure Para Tubes *right* they have proven a great trade stimulus.

By *right* we mean Dealers who talk Fisk Tube *Quality* and Economy, 1st, because they know we back them to the limit in every word they say; and 2nd, because the unquestioned integrity of The Fisk Rubber Company tells them that we would not claim for our product qualities that were not in it.

Fisk Tubes always give satisfaction. Add to pure Para rubber just enough sulphur to vulcanize and you have the Fisk Tube. The original Fisk splicing, Fisk valve pad, etc., are special features adding to this *tube superiority* and making satisfied customers.



Correspondence Regarding Dealers' Territory Should be Addressed to Dept. 23. Embrace This Real Business Opportunity. Write To-day.

THE FISK RUBBER CO.

Factory and Home Office: Chicopee Falls, Mass.

DISTRIBUTORS: THE FISK RUBBER COMPANY of N. Y.
Branches in 40 Principal Cities

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To start an ice-cold engine instantly

simply spin it with a rush

Simplex

Lancia

Knox

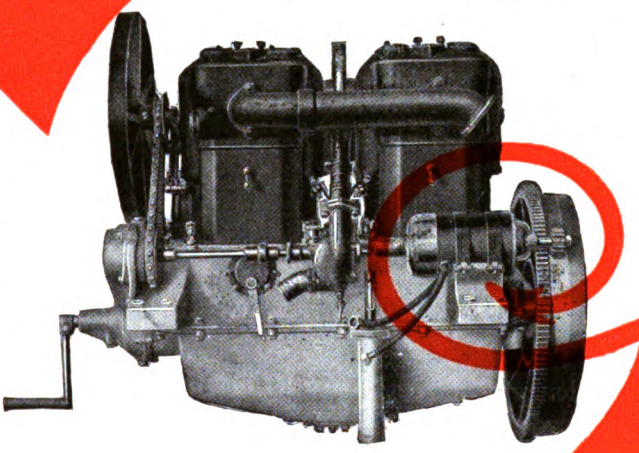
Does that sound fantastic? Listen!

Air at **zero** Fahrenheit, if compressed to only 75 lbs. gauge pressure without loss of heat to the cylinder walls, would have a compression temperature of 315 degrees. If compressed to 90 lbs. gauge, the temperature would be 350 degrees.

The quicker the engine turns, the less heat will be lost and the nearer right will be the quantity of liquid gasoline sucked into the cylinders.

Spin the engine with a rush, and the liquid gasoline will at once be evaporated by the heat of compression:—the engine will start instantly.

Turn the engine slowly, and it will start, indeed, —but only after the cylinder walls have themselves been warmed enough to evaporate the gasoline. And leakage will prolong the process still further. In the end, the battery will have several times as much work to do as it would if a quick start were made.



Simplex "38," 4⅞ x 6½ inches, with Rushmore Model C Starter

The Starter that starts with a rush is

The RUSHMORE STARTER

Regal

Mercer

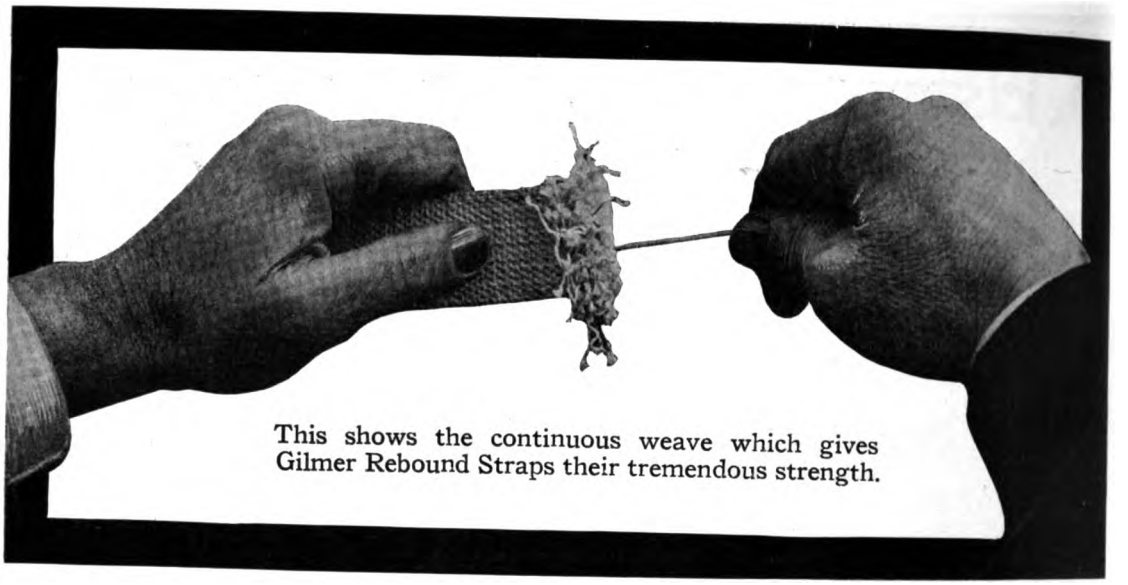
Kline

The Model C, weighing only 30 lbs., spins a six-cylinder 4½ x 5½ engine at 100 r.p.m., using 100 amperes at 5.6 volts. It spins smaller engines at speeds up to 200 r.p.m. or faster. For spinning speed with equal current it is in a class absolutely alone. Yet it costs the car manufacturer from $25 to $50 less than any other starter of equal power.

The Rushmore Starting and Lighting System is used on the above-named cars. Several manufacturers, now using other and less perfect systems, will announce next season the adoption of Rushmore equipment.

RUSHMORE DYNAMO WORKS *Plainfield, N.J.*

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This shows the continuous weave which gives Gilmer Rebound Straps their tremendous strength.

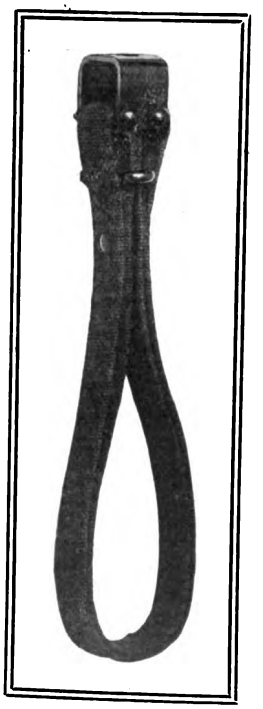
Gilmer Rebound Straps—What Work They Do and Why They Do It Better Than Any Other

WHEN automobile springs are depressed sharply by the weight of the car passing over a rough place in the roadway, they tend to return to their normal shape, and such a tendency causes the car to rebound upwards.

When this happens the rear springs have to meet a very strenuous situation — that of the body pulling upward and the weight of the rear axle pulling downward.

This is a condition which causes a great percentage of broken springs. This is a situation shock absorbers do not seem adequate to meet.

This is why every car should be equipped with rebound straps to prevent the car pulling one way and the rear axle pulling the other way on the rear springs.



The heavier the car or the heavier the rear axle construction the greater the stress on the springs and the greater the need for strength in the rebound straps used.

Gilmer Rebound Straps are made of the best grade of material obtainable, woven to secure the greatest strength and treated to resist the deterioration of every element they may be subjected to.

Gilmer Rebound Straps are tested to stand a large percentage of overload. They are used on the finest of American made cars.

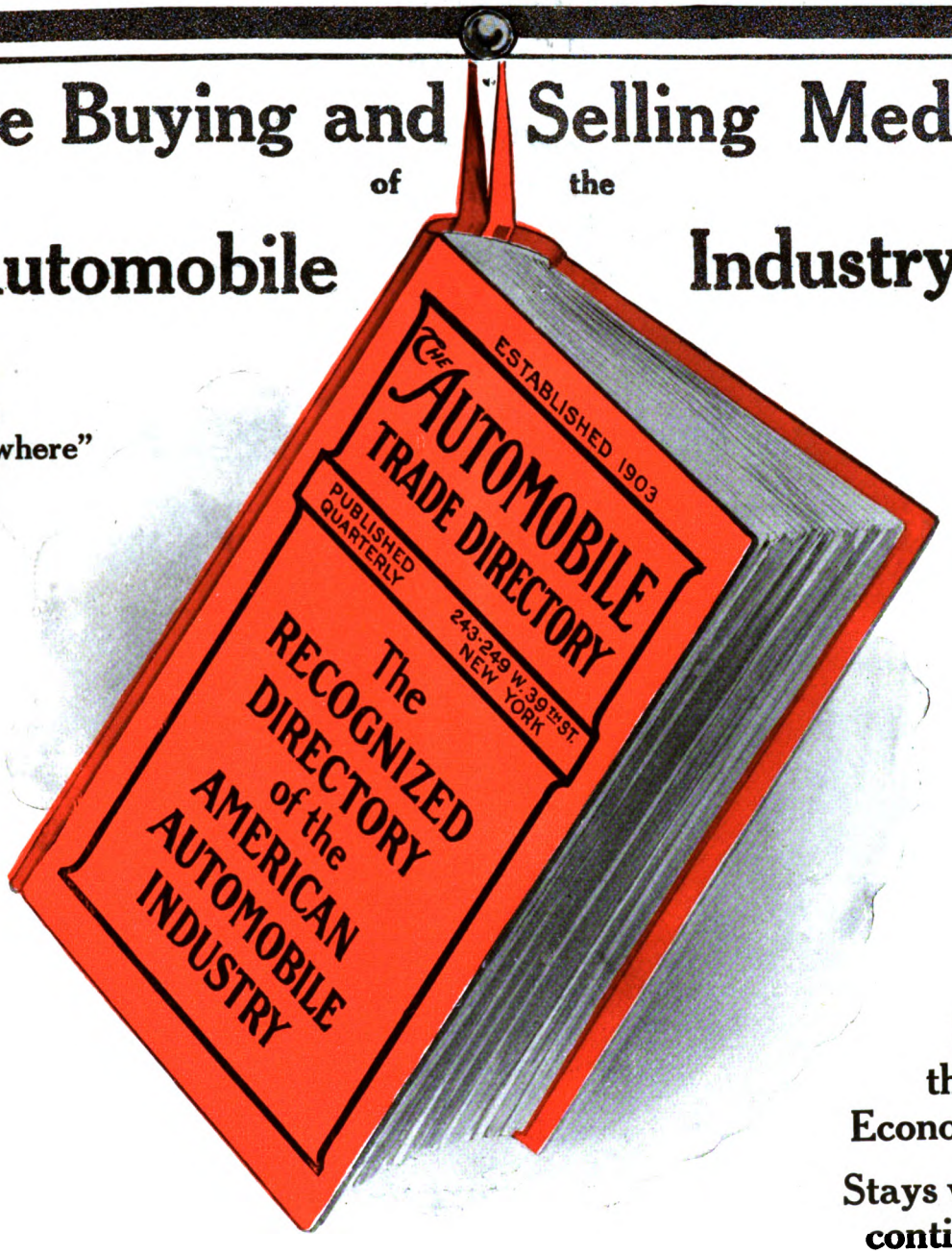
L. H. GILMER COMPANY

52 N. Seventh Street **PHILADELPHIA, PA.**

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The Buying and Selling Medium of the Automobile Industry

"It Hangs Everywhere"



Reaches the Buyer Economically!

Stays with him continuously!

The judicious advertising medium of the automobile trade used by nearly 1,000 advertisers, because—
IT PAYS

THE AUTOMOBILE TRADE DIRECTORY

243-249 West 39th Street NEW YORK

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This shows the Thurber Rotary Starter. Operates by compressed air. Pump and starter built as a unit. Has no belts nor chains. Noiseless, sure, reliable; can't wear out.



This starter can be applied to any car. Requires no special lay-out. Goes on front of the car in place of crank. Installed without touching the engine. Is neat, compact, easily understood.

Here Is the Simplest and Surest "Starter" in the World

We expect to get challenged on that statement; but we are ready with our proof. We ask no odds of anyone. We invite you to make your own comparative tests. We are prepared to have the validity of our assertion stand or fall on what the Thurber Rotary Starter actually does when tested on your motor. "Deeds not words" is our motto.

Two years ago we placed the Thurber Rotary Starter on the market. We knew we were right in principle; a year in service under many different conditions showed us many details that could be improved. The Thurber Rotary Starter of today is offered as a finished product. There is not an experimental feature about it. It is right—and it stays right in service.

The Ultimate Starter

There is a growing conviction that compressed **air** is the **ultimate starting** energy. This conviction is based upon several well-known facts, viz:

Simplicity, in which it excels.

Efficiency, meaning ample **power** plus **reliability** under every condition.

Economy. No cost of operation.

Ease of installation and adaptability to any motor.

Reasonableness of price.

Spins Motor Any Weather

The "Thurber" is easy to operate. Press foot on button which operates the patented double-action valve and this admits **air** to the starter which instantly **spins** the motor. It doesn't just **turn** it over but **spins** it every time. Why have manufacturers of fire trucks welcomed the Thurber? All of them use large, high compression motors. All demand reliability above everything. Think it over.

E. R. Thomas Motor Co. Builders of Fire Trucks Write:

"The starter has worked successfully every time. A test was made spinning the motor for a fire truck chassis (6 cyl. 5¾ x 5½). With 150 lbs. compressed air in tank 7" x 48", ten consecutive starts were made with an intermission of thirty seconds and only reduced the pressure to 100 lbs., averaging 5 lbs. to the start. Tried it twenty-seven times and it worked successfully each time."

D. Rosenbach, Sales Manager Rayfield Carburetors, Writes:

"I have been thoroughly satisfied with the action of the Thurber Rotary Starter and have no fault to find with it at all. Have driven the car 12,000 miles this year, the starter being used under all conditions and never found wanting."

There you have the results of two different kinds of tests. In our files are many more letters just as convincing.

Will you let us send you a book that tells you all about the Thurber Rotary Starter?

The Thurber Rotary Starter Co.

687 Atwater Street East, Detroit, Mich.

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QUALITY

The quality of Booth Felt Washers and the wisdom of using them is apparent, especially when considered in connection with a rear axle assembly.

Shoddy washers, which readily grind to pieces, are wholly inadequate to keep lubricants in the differentials and to protect the brake bands from getting saturated with oil.

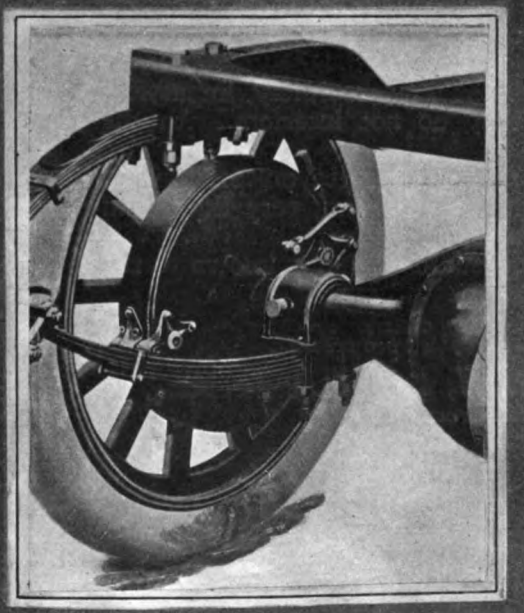
Booth Quality Washers are made of the best grade of wool felt, and while they cost a little more than shoddy washers, their use is true economy.

Booth TRADE MARK **FELT WASHERS**

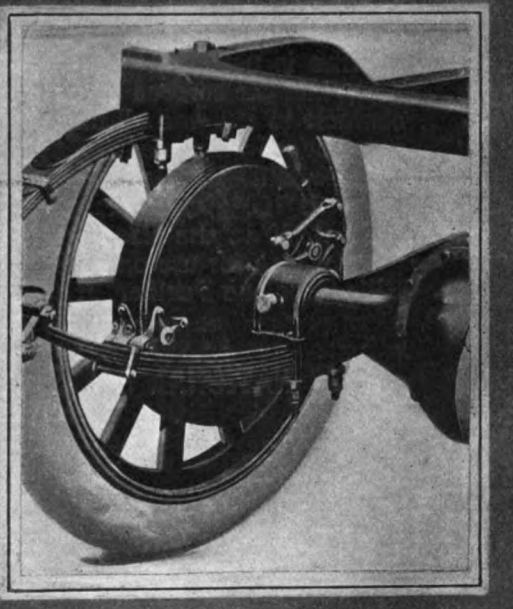
Manufactured by

N. E. BOOTH, 642-644 Pacific St. Brooklyn, N. Y.

Canadian Office and Factory:
The Booth Felt Co., Ltd., Gananoque, Ontario



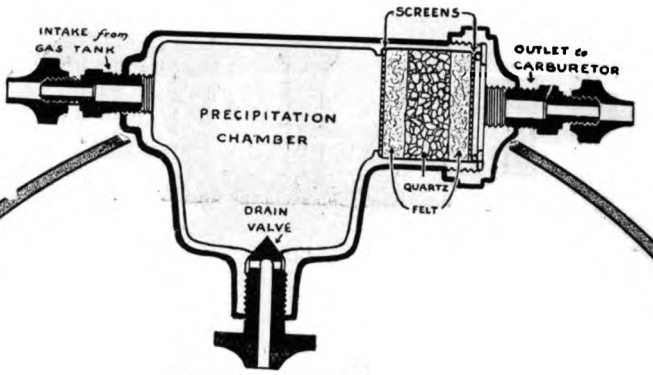
Shoddy



Booth Quality

The essential requirements of rear axles constitute a supreme test of a washer's qualifications. Booth Quality Washers meet all such situations perfectly while shoddy washers fail utterly—with the result that the rear axle lubricants ooze out, get into the brake linings and onto the rear wheel tires, defeating the purpose of one and shortening the life of the other.

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Simple, isn't it?

It is not enough that gasolene be run through a strainer. Merely straining the fuel is only a part of what is necessary before a carburetor can do its work efficiently. Commercial gasolene needs to be strained and FILTERED before it is free from particles of dirt and grit.

The Ellis Gasolene Purifier

strains and filters out every particle of solid substance, however small, from gasolene, and by reason of the fact that water is heavier than gasolene, traps that troublesome element in its precipitation chamber.

The diagram shows clearly how impossible it is for anything but the pure gasolene to get to the carburetor if an Ellis Gasolene Purifier is used.

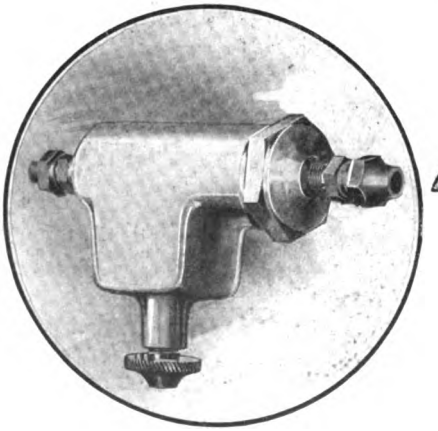
While the screens and filters impose an absolutely impassible obstacle to any and all impurities, they do not interfere with the free flow of gasolene.

The Ellis Gasolene Purifier is the only device on the market which is 100% efficient. It is made of aluminum, very light, and costs $3.50 in the size applicable for automobiles.

The size for use on motorcycles costs $2.50 and is known as the Ellis Gasolene Purifier, Jr.

Send for particulars and discounts to dealers. Specify the outside diameter of fuel feed pipe when ordering.

THE NATIONAL SALES COMPANY, 45 Milk St., Boston, Mass.
Sole Manufacturers



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Stewart-Warner Speedometer Service

The Largest Number of Direct Factory Branches

Atlanta, Ga., 399 Peachtree St.
Boston, Mass., 174 Columbus Ave.
Buffalo, N. Y., 724 Main St.
Chicago, Ill., 1312 Michigan Ave.
Cleveland, O., 1831 Euclid Ave.
Detroit, Mich., 1235 Woodward Ave.
Indianapolis, Ind., 514 N. Capitol Ave.
Kansas City, Mo., 1825 Grand Ave.
Los Angeles, Cal., 115 E. 10th St.
Minneapolis, Minn., 635 3rd Ave. S.
New York, N. Y., 233 W. 58th St.
Philadelphia, Pa., 608 N. Broad St.
Pittsburgh, Pa., 301 N. Craig St.
St. Louis, Mo., 3333 Olive St.
San Francisco, Cal., 1447 Van Ness Ave.

London, England

Paris, France

We do not list a lot of jobbers, accessory dealers, garages, repair depots and gasoline stations and call them branches. Our branches are direct factory branches, completely stocked and in charge of our own factory trained staff.

The Greatest Chain of Service Stations

Albany, N. Y., 288 Central Ave.
Baltimore, Md., 146 W. Mt. Royal Ave.
Birmingham, Ala., 519-521 South 20th St.
Bridgeport, Conn., 433 Canon St.
Brooklyn, N. Y., 1186 Bedford Ave.
Buenos Aires, Argentine Republic, So. America
Calgary, Alta., Can.
Christ Church, New Zealand
Cincinnati, O., 925 Race St.
Dallas, Tex., 1922 Main St.
Dayton, O., 102 N. Main St.
Davenport, Ia., 217-221 Iowa St.
Denver, Col., 1616-1618 Broadway
Des Moines, Ia., 12th & Locust St.
Edmonton, Alberta, Can.
Erie, Pa., 1721 Sassafras St.
Ft. Wayne, Ind., 115 Washington St.
Hamburg, Germany
Hartford, Conn., 14-16 Wells St.
Houston, Tex., 1311 Main St.
Jacksonville, Fla., 925 Main St.
Louisville, Ky., 628-32 3rd St.
Memphis, Tenn., 276 Monroe Ave.
Milwaukee, Wis., 284 Lake St.
Montreal, Que., Can., 97 Belury St.
Newark, N. J., 237 Halsey St.
New Orleans, La., 613 Baronne St.
Norfolk, Va., 2005 Brambleton Ave.
Omaha, Neb., 2119 Farnum Ave.
Oshawa, Ontario, Can.
Portland, Me., 18 Free St.
Portland, Ore., 31-33 N. Broadway
Providence, R. I., 121 Fountain St.
Puteaux Seine, France
Regina, Sask., Can., 947 Rose St.
Richmond, Va., 106 No. 8th St.
Rochester, N. Y., 205 State St.
Salt Lake City, Utah, 36 W. 2nd St.
San Antonio, Tex., 429 Main St.
San Diego, Cal., 1100 "A" St.
S. Paolo, Brazil, So. America
Springfield, Mass., 317 Dwight St.
Seattle, Wash.,
817 E. Pike St.
916 E. Pike St.
Syracuse, N. Y., 514 E. Genesee St.
Spokane, Wash.
Sydney, N. S. W., Australia
Toledo, O., 2233 Madison Ave.
Toronto, Ont., Can., 5 Wood St.
Transvaal, S. Africa
Trenton, N. J., 315 So. Broad St.
Vancouver, B. C., Can., 825 Pender St.; 516 Howe St.
Washington, D. C., 1328-1330 New York Ave., N. W.
Wanganui, New Zealand
Winnipeg, Ont., Can.

These are real service stations. Not merely a "place" which carries a couple of speedometers; not "places" that cannot make actual repairs under our guarantee. Each Stewart-Warner service station is fully equipped—in charge of and operated by experienced Stewart-Warner Speedometer men, to take care of all speedometer wants, repairs, adjustments and replacements.

The Fairest and Most Liberal One Year Guarantee

We will repair or replace absolutely free of charge at our factory, branches or at any of our authorized service stations any Stewart Speedometer or Warner Auto-Meter or part that proves defective in material or workmanship within one year from date of sale to car buyer, providing transportation charges have been prepaid. This guarantee does not cover fibre pinions.

Stewart-Warner Speedometer Corporation

Factories: Beloit, Wis. Chicago, Ill.

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Can a Pleasure Car Dealer Sell Delivery Cars?

PERHAPS. But, at least, there is some reason to believe that he can.

Selling Pleasure cars and selling Delivery cars require entirely different methods.

That is precisely the reason that we want, as distributors of the Commerce Car, pleasure car dealers who can and will consider the selling of delivery cars as a distinct selling operation, a distinct department and a distinct business undertaking.

Can the successful pleasure car dealer be equally successful selling delivery cars?

Most certainly he can.

Provided, first, that he has the vision to see the fruitful field for delivery cars and his own inviting opportunity therein as clearly as he has seen the pleasure car field.

Provided, second, that he is a business man with energy, convictions and a clear head.

Provided, third, that he can disassociate the delivery car field from the truck field and realize that five delivery cars can be sold where one truck of a ton or more can be sold; that delivery cars are bought for different reasons and different purposes; that delivery cars are more easily sold and the profits are proportionately higher, because the service costs proportionately less.

Provided, fourth, that he has the imagination to grasp the tremendous possibilities of a delivery car that has actually been proved a substantial and practical success.

Here is the fundamental difference.

The delivery car prospect doesn't often walk into the salesroom—as the pleasure car prospect does.

But that doesn't prove that there is no demand for delivery cars. We have proved there is a demand.

We want dealers who have the business intelligence to grasp that fact.

There is already a demand for delivery cars—particularly Commerce Cars—a real and awakening demand—and the successful dealer is he who directs and stimulates and cashes in on that already existing demand.

Demand is merely the willingness of people in unconscious need of a thing to buy it. Demand merely represents the field and the delivery car field today offers the largest opportunities and most permanent and profitable business that this magical automobile industry has ever offered.

We prophesy that within three years the delivery car business is going to be the rock-bottom commercial foundation of the automobile business.

Is your business vision broader than pleasure cars?

Are your eyes on profits, substantial and increasing, and are you in business to endure and grow and prosper and build for your future with us?

We are making and selling business machinery, more essential and much more profitable than mowing machines.

And we can't—and you can't—use pleasure car selling methods.

We want dealers who are business men first and automobile men afterwards.

Write for details or come to Detroit and see for yourself what the Commerce Car is doing and has done in "The City Motor-wise."

The Commerce Motor Car Company

Administration Dept., 625-639 Penobscot Bldg., Detroit, Mich.



SPECIFICATIONS

1,000-pound capacity, 25 per cent. overload, guaranteed.

Equipment, including electric horn, complete.

32 x 3½ Goodyear pneumatic tire.

Express, full panel, or canopy top.

Clear floor space—64 inches long; 42 inches wide; 52½ inches high.

Gear ratio—6 to 1 on high; 20 to 1 on low.

Friction drive.

Wheelbase—102 in.

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Push Button and Cable Attachment

MOTOPHONE

Mechanically Operated

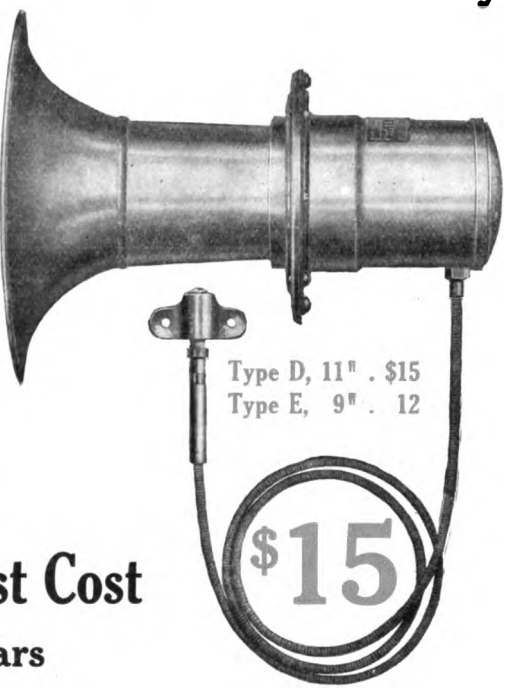
The Greatest Sensation in Auto-Horn Industry

Operated exactly the same as an Electric Horn EXCEPT

NO Adjustments Motor Troubles

NO Battery Expense Electrical Wiring

Just push the button (the same as in a Motor Horn) and a loud, continuous blast is emitted—as powerful as any warning signal made.



REMEMBER

The First Cost is The Last Cost

Guaranteed for *Two* Years

The **Cable Attachment** of the Motophone has been devised and perfected to offer to the trade a mechanical horn having all the characteristics of motor driven (electrical) horns **without** the care of the electric motor, the cost of maintenance, adjustments and the numerous petty annoyances to which the user of the motor horn is subjected.

Its Action is Positive, Instantaneous, Certain at All Times

The Motophone is made in five models as follows:

Type A (Torpedo), 11" $12
Type B (with Oval Bell), 9" . . . 10
Type C (for Motorcycles) $8.00
Type D (with Cable Attachment), 11" $15
Type E (with Cable Attachment), 9" 12

Automobile Supply Manufacturing Company

220 Taaffe Place INCORPORATED 1904 **BROOKLYN, N. Y.**

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CAPACITY
GURNEY
ENDURANCE

Speaking of Trials—

of tests—in the tests to which engineers subject ball bearings they find it almost impossible to break down a Gurney Bearing. Why is this? Why does a ball or a raceway in a Gurney Bearing stand up better than in any other ball bearing? It is due more than to any other single cause to the greater closeness and exactness of our RACE CONTOUR. Granting, for the sake of the argument, that in other respects other bearings are as good as ours, the difference in the contour of our raceways alone would ensure for our bearings greater capacity and endurance.

¶ When a load is imposed upon a ball bearing the steel of both balls and raceways yields and the area of contact between ball and raceway increases. As the area of contact increases the resistance to further distortion increases, and so the supporting capacity is increased. Under load the steel yields until with the increasing contacting or supporting surfaces the resistence to further distortion equals the load.

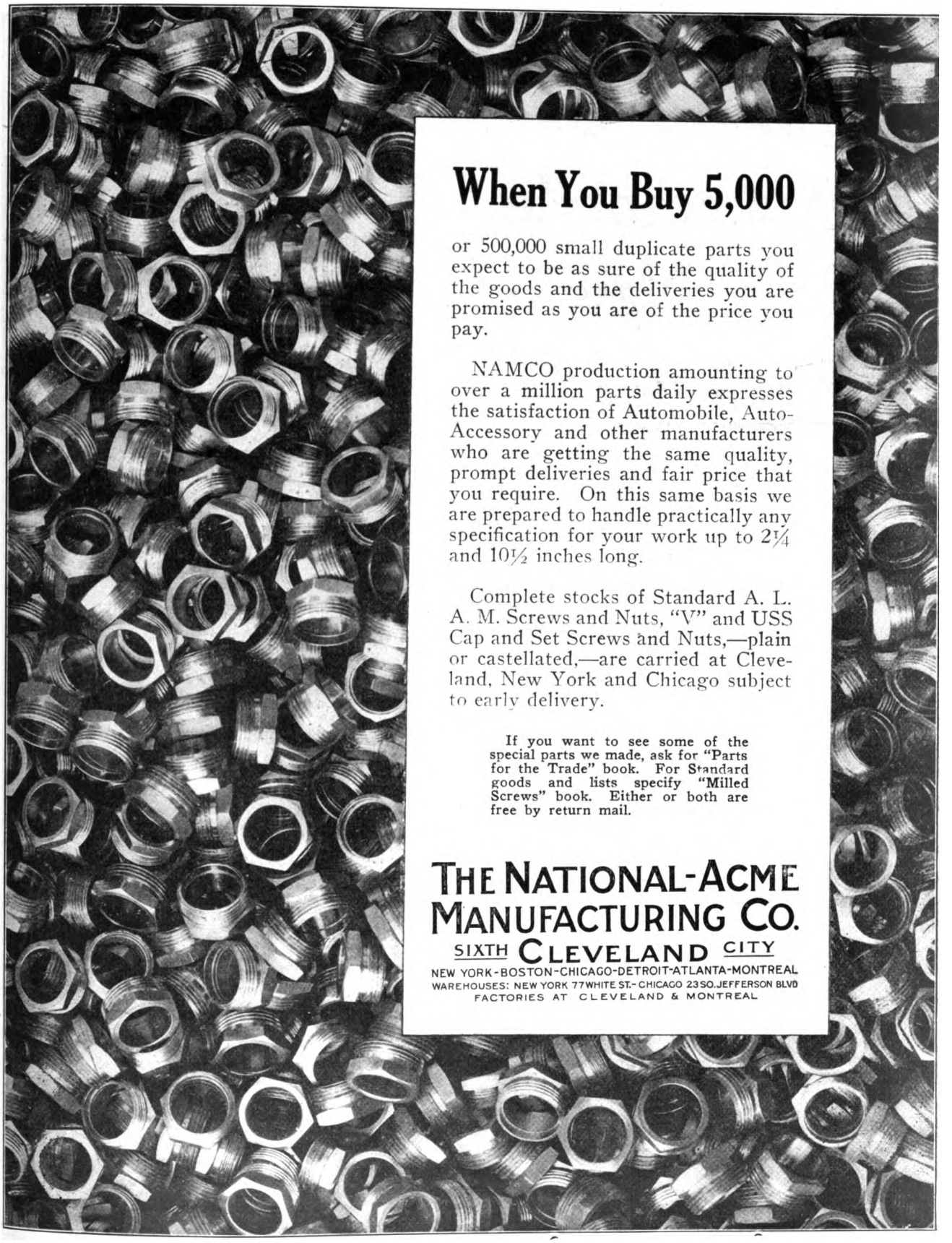
¶ Now, the closer the race contour is to ball contour the less yield or springing of the steel is required to get a given area of contact and support. When a ball is running in a raceway of 4% greater contour the steel is distorted less than when the contour is 7% or 10% greater.

¶ This, then, is the simple explanation for the much greater capacity and endurance of the Gurney Bearings. With our 4% raceways a given load distorts the steel of both balls and raceways less than in any other bearings made. CLOSER RACE CONTOUR, LESS DISTORTION, GREATER CAPACITY, AND LONGER LIFE. That is the race contour argument in a nutshell.

GURNEY BALL BEARING COMPANY

Jamestown, N. Y.

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When You Buy 5,000

or 500,000 small duplicate parts you expect to be as sure of the quality of the goods and the deliveries you are promised as you are of the price you pay.

NAMCO production amounting to over a million parts daily expresses the satisfaction of Automobile, Auto-Accessory and other manufacturers who are getting the same quality, prompt deliveries and fair price that you require. On this same basis we are prepared to handle practically any specification for your work up to 2¼ and 10½ inches long.

Complete stocks of Standard A. L. A. M. Screws and Nuts, "V" and USS Cap and Set Screws and Nuts,—plain or castellated,—are carried at Cleveland, New York and Chicago subject to early delivery.

If you want to see some of the special parts we made, ask for "Parts for the Trade" book. For Standard goods and lists specify "Milled Screws" book. Either or both are free by return mail.

THE NATIONAL-ACME MANUFACTURING CO.

SIXTH CLEVELAND CITY

NEW YORK-BOSTON-CHICAGO-DETROIT-ATLANTA-MONTREAL

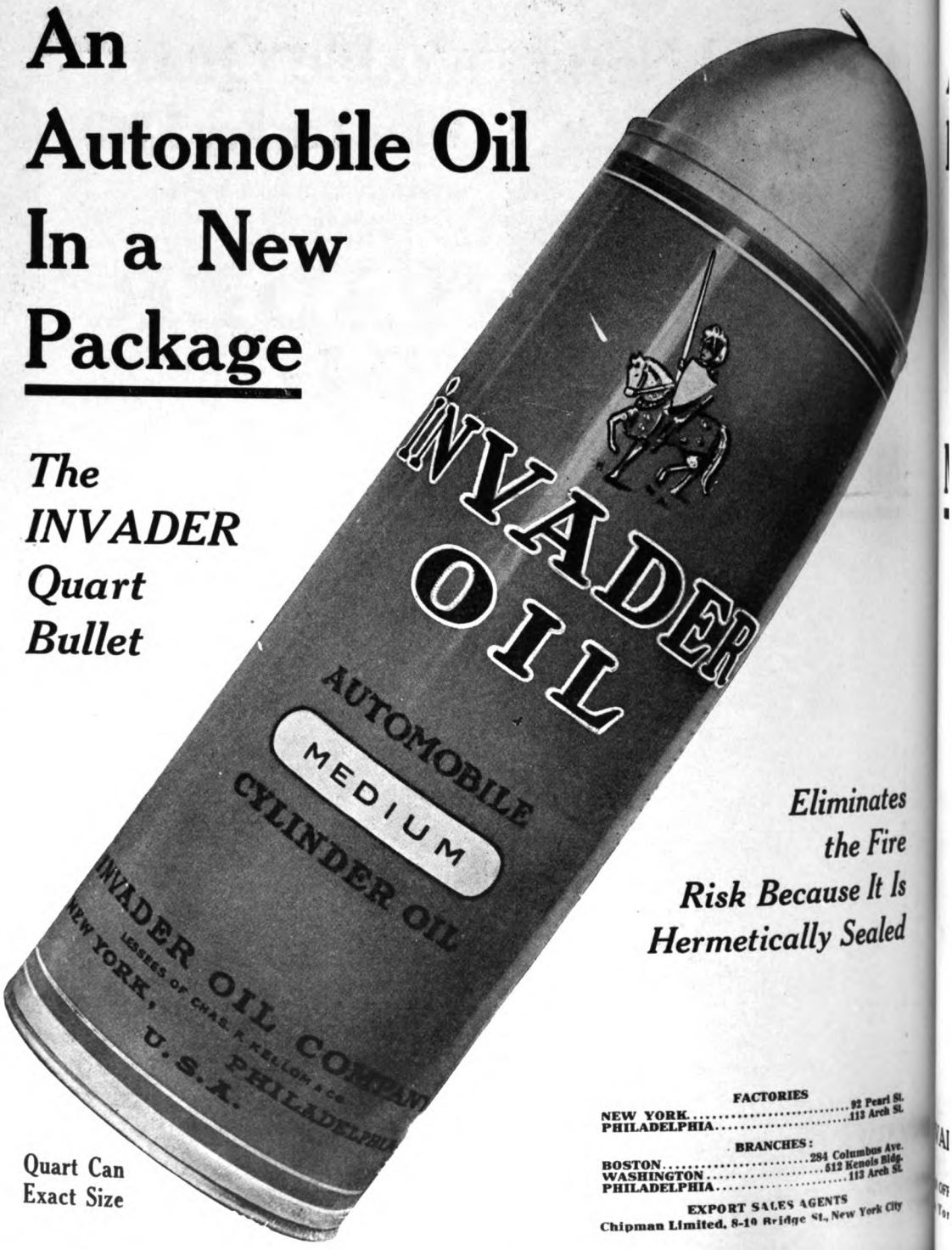
WAREHOUSES: NEW YORK 77 WHITE ST.- CHICAGO 23 SO. JEFFERSON BLVD

FACTORIES AT CLEVELAND & MONTREAL

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An Automobile Oil In a New Package

The INVADER Quart Bullet



Quart Can Exact Size

Eliminates the Fire Risk Because It Is Hermetically Sealed

FACTORIES
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON.....612 Kenois Bldg.
PHILADELPHIA.....113 Arch St.

EXPORT SALES AGENTS
Chipman Limited, 8-10 Bridge St., New York City

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A Sealed Non-Leakable Quart Package of----

INVADER OIL

Mr. Dealer---

THE INVADER quart bullet is a clean, sealed, small shelf package, convenient to handle and always ready to hand over the counter.

There is no longer any need of going back to the oil tank. It saves time, trouble and money. There is neither waste nor dirt.

Write for Prices

NVADER OIL COMPANY, Inc.
Lessees of Charles F. Kellom & Co.
AIN OFFICE: 81 BROAD STREET, NEW YORK
ew York City Branch: 1906 Broadway

TERRITORIAL AGENTS

Los Angeles, Cal.	W. D. Newerf Rubber Co.
San Francisco, Cal.	W. D. Newerf Rubber Co.
Tacoma, Wash.	Union Motor Car Co.
Omaha, Neb.	Lininger Implement Co.
Detroit, Mich.	Boyer-Campbell Co.
St. Louis, Mo.	Beck & Corbitt Iron Co.
Salina, Kan.	Lee Hardware Co.
Kansas City, Mo.,	American Lubricating & Supply Co.
Portland, Me.	James Bailey Company

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Tire Insurance for $1.00



The New Positive Lock Stop Twitchell Air Gauge

The demand for Twitchells this year was in excess of our ability to satisfy it. Next year it promises to be even greater. Be ready to meet it.

INSIST upon getting the NEW Twitchell. It possesses a positive lock stop feature that renders absolutely impossible the registration of any but the exact air pressure in your tires. This construction permits the use of the gauge no matter in what position the tire valve rests. You no longer have to turn the wheel around until the valve is at the bottom. Another improvement to be found in the NEW Twitchell is the lengthened base which permits of an airtight connection being made with the valve no matter how small the space between the rim and hub. The NEW Twitchell is accurate, simple, durable, easily applied and easily read.

For the holidays we put up the NEW Twitchell in special Xmas boxes.

Make a present of a NEW Twitchell to your motoring friend.

The Twitchell Gauge Company, 1212 Michigan Avenue Chicago, Ill.

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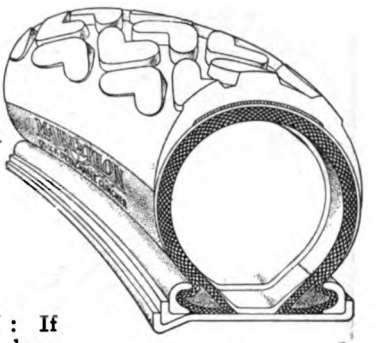
Sometimes it takes months, sometimes even years, for a motorist to come around to buying Kelly-Springfield Tires. That's because some people have more patience than others.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Boss Rubber Co., Denver, Colo.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Central Rubber & Supply Co., Indianapolis, Ind.
H. R. Olmsted & Son, Syracuse. N. Y.
Bering Tire & Rubber Co., Houston, Texas.
Todd Rubber Co., New Haven, Conn.
Atkinson Tire & Supply Co., Jacksonville, Fla.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.



Factory Insured

GENTLEMEN: If a tire is to give long service and mileage, it must be "BUILT IN" at the factory. There is no question about that. And you know it as well as we do.

The reason why so very few tires give over 4,000 miles service is because only that much service is "BUILT INTO" them by the maker.

THE MARATHON TIRE IS POSITIVELY "FACTORY INSURED." We "BUILD INTO" Marathon the utmost quality—the utmost service. That's why we can guarantee Marathon for 4,000 miles. That's why the major average is far above 4,000.

Read How We Do It!

Finest—Sea Island—Fabric

We use absolutely nothing but Sea Island. That's the best fabric we can buy—the best that's made—highest in tensile strength. It costs us more but it insures greatest possible service to tire users.

Best Rubber That Grows

None but the *Best Rubber* goes into Marathon Tires. That also costs *us* more, but it's an immense saving to *users* of Marathon tires. We spare no expense in materials.

Very Slow, Very Careful Building

To insure absolutely *perfect* construction, we build every Marathon tire by hand. Expert tire builders do the work—very slowly. Hurrying is not permitted.

This very slow, very careful hand building also costs us more—reduces our profit—but it safeguards Marathon *users* against faulty construction, blow outs and short service.

Wrapped Tread, Open Steam Single Cure

Finally we use a special wrapped tread process and single cure in open steam. That gives unitized construction—makes all parts one. It also intensifies the wear resistance.

Factory Insured 4,000 Miles

That's how we "*Factory Insure*" Marathon tires—why we can rigidly guarantee them for 4,000 miles. Yet that is the minimum Marathan service. The major average is way above 4,000.

You Can sell this Tire with Entire Satisfaction and make a better profit.

Ask for our exclusive dealers' proposition.

The Marathon Tire & Rubber Co.

CUYAHOGA FALLS, OHIO

Distributors in most large cities

SPEED ENDURANCE MARATHON (109)

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American made for American trade

NEW DEPARTURE

Guaranteed

BALL BEARINGS

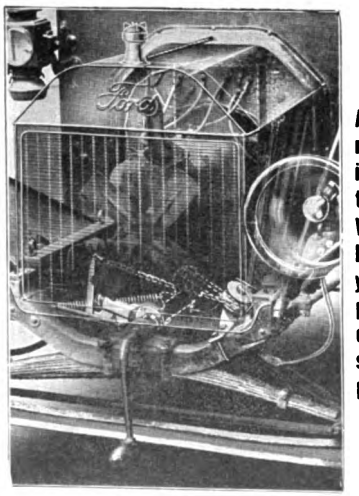
To facilitate supplying demand for garages, dealers and owners, for New Departure ball bearings, the following distribution agencies are announced, where stock of these bearings is carried.

Ahlberg Bearing Co.....93 Massachusetts Ave., Boston, Mass.
Pruyn & Bilodeau.....1550 River St., Hyde Park, Boston, Mass.
Ahlberg Bearing Co.....1790 Broadway, New York City
Jos. C. Gorey & Co.....352 W. 50th St., New York City
The Gwilliam Co.....Broadway and 58th St., New York City
Pruyn & Bilodeau..1876 Broadway, Cor. W. 62nd St., New York City
Albany Hdwe. & Iron Co.....Albany, N. Y.
Syracuse Rubber Co.....212 S. Clinton St., Syracuse, N. Y.
Iroquois Rubber Co.....279-283 Washington St., Buffalo, N. Y.
Rochester Rubber Co.....24 Exchange St., Rochester, N. Y.
The Gwilliam Co.....1314 Arch St., Philadelphia, Pa.
Bumiller-Remelin Co.....432 Main St., Cincinnati, Ohio
Cray Bros.....1111 West 11th St., Cleveland, Ohio
Hearsey-Willis Co.....Indianapolis, Ind.
Machinists Supply Co.....Pittsburgh, Pa.
Ahlberg Bearing Co.....2637 Michigan Ave., Chicago, Ill.
Chicago Pulley & Shafting Co.....32-36 S. Clinton St., Chicago, Ill.
Herring Motor Supply Co.....912-14 Locust St., Des Moines, Iowa
Faeth Iron Co.....1125-31 West Eighth St., Kansas City, Mo.
Pence Automobile Co.....800 Hennepin Ave., Minneapolis, Minn.
Fred Campbell.....1109 Locust St., St. Louis, Mo.
Elyea-Austell Co.....Atlanta, Ga.
The Lininger Implement Co.....Sixth and Pacific Sts., Omaha, Neb.
Denver Auto Goods Co.....1600 Broadway, Denver, Colo.
Fry & McGill.....16th and Broadway, Denver, Colo.
M. L. Foss.....1729 California St., Denver, Colo.
Bertram Motor Supply Co.....251 South State St., Salt Lake City, Utah
J. W. Leavitt & Co.....301 Golden Gate Ave., San Francisco, Cal.
Irvin Silverberg & Co.....541 Van Ness Ave., San Francisco, Cal.
Kimball-Upson Co....609-11 K St.; 608-15 Oak Ave., Sacramento, Cal.
Western Rubber & Supply Co.....1011 S. Olive St., Los Angeles, Cal.
Western Rubber & Supply Co., 66 South Fairoaks Ave., Pasadena, Cal.
Western Rubber & Supply Co.....1364 Fifth St., San Diego, Cal.
Ballou & Wright.....Seventh and Oak Sts., Portland, Ore.
Ballou & Wright.....817 E. Pike St., Seattle, Wash.
Child, Day & Churchill Co.....1215 First Ave., Spokane, Wash.
Automobile Supply Co.....Tacoma, Wash.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit

FORD ENGINE STARTER—$9.00



You do not have to leave your seat to start your Ford Motor when equipped with this Starter.

All that is necessary is to pull the lever. Will absolutely turn your motor past firing compression every pull.

Can be easily attached by anyone in about one hour. Absolutely no mechanical work necessary to install same. To be had at all dealers or direct on receipt of price.

$9.00

DEALERS: WRITE FOR OUR SALES PROPOSITION *TODAY.*
For further information, write us.

Universal Manufacturing Co., Racine, Wis.

THE STURDY STUTZ

MADE GOOD IN A DAY

Stutz Owners Never Say "I Drive a Car"---they Always Say---

"I drive a Stutz"

If you are a Stutz owner you know this to be true. When you get your Stutz, if you do not own one now, you will say it, too.

Stutz Owners Are Stutz Boosters

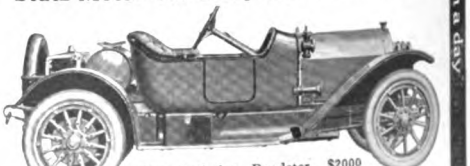
You will never live to see the day when a Stutz owner will apologize because he drives a Stutz—he needs no excuse. In buying a car, don't do yourself the injustice of making a selection without first seeing the four and six cylinder Stutz in the new models.

You won't find any radical mechanical changes—they were not necessary. Just a few touches here and there have been added—more generous upholstery, springs a little longer, with greater service and power.

Write for our new illustrated catalog No. 4-15

Dealers: We still have a little desirable territory open. Write or wire quick.

Stutz Motor Car Company of Indianapolis



Four-Cylinder Roadster, $2000
Six-Cylinder Roadster - 2250

STUTZ — the car that made good in a day

STUTZ — the car that made good in a day

STUTZ — the car that made good in a day

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Power Pump Pointers

A four-cylinder pump requires a steady, even draw on the motor. One-cylinder pumps are destructive to the quietness of half-time gears of the motor. Spark plug pumps produce an unbalanced motor and unnecessary wear on the bearings, because the pump delivers air once with every fourth cycle of the motor. This necessitates a high rate of speed with one cylinder dead, to get the pressure up in time.

Four Cylinder KELLOGG Tire Pump

Has the correct principle and many practical advantages to increase its all around durability and efficiency over all other tire pumps. It has been generally adopted as standard equipment by makers of the better cars.



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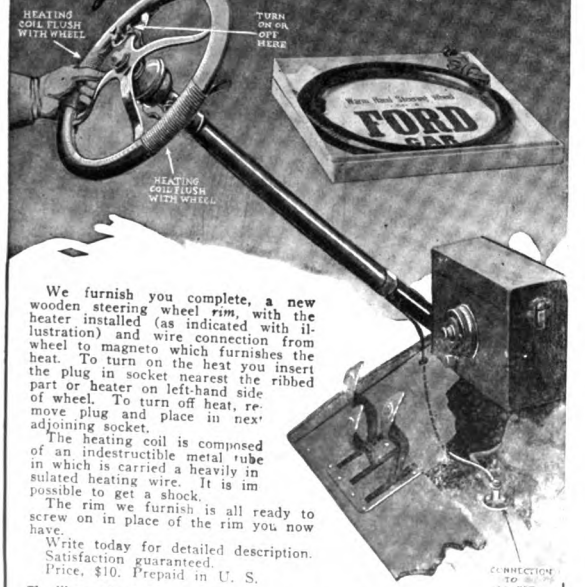
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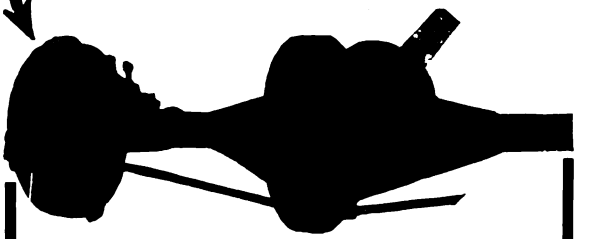
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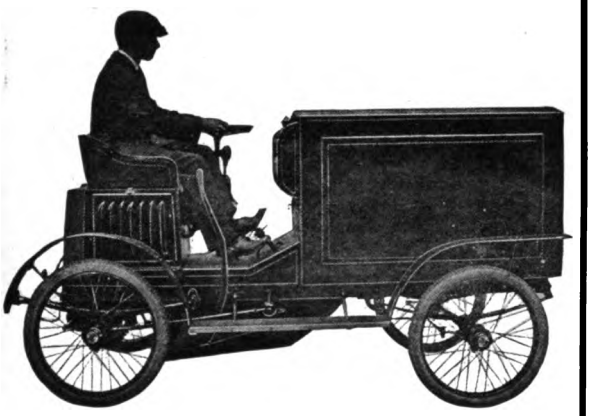
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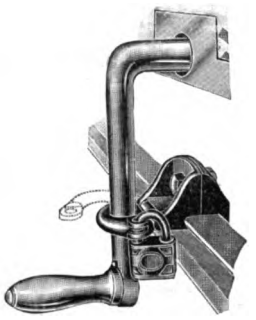


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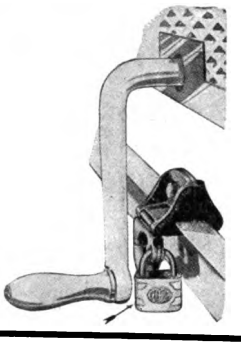
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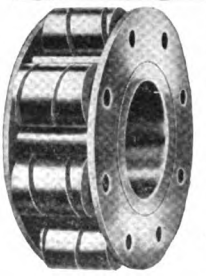
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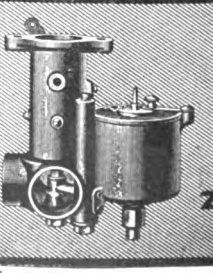
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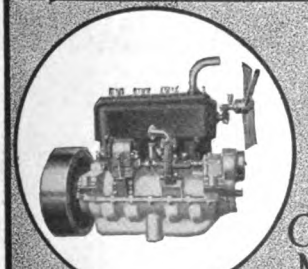
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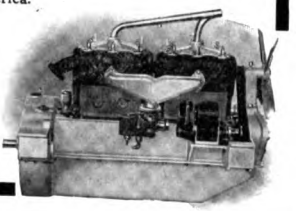
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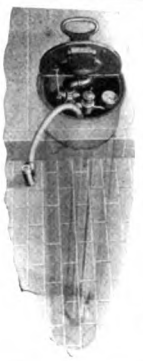
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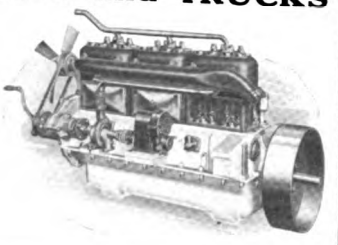
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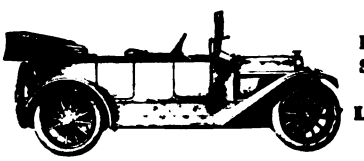
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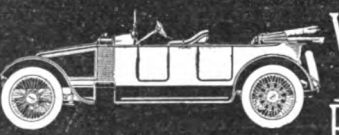
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"SIX-48" $3250 Fully Equipped



Riverside Touring Car

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DETROIT U. S. A.

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5-Passenger Touring
F. O. B. Detroit.....$2485

Every Part Is Standard and the Best in Quality

Strong Features:

Continental Six-Cylinder Motor. Timken Axles and Bearings. Brown-Lipe Transmission. Gemmer Steering Gear. Jesco Lighting and Starting. Warner Speedometer. Mayo Honeycomb Radiator. Mott Wire Wheels. Rear and Windshield. Full floating rear axle, aluminum hood, 130 in. wheelbase, left hand drive, etc.

S. & M. MOTOR CO., Inc., Detroit, Mich.

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CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"
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The Corbin Screw Corporation
THE AMERICAN HARDWARE CORPORATION, Successors
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Cellular—Honeycomb—Spiral Tube Cooling Systems for Pleasure Cars — Trucks — Tractors.
Write to LONG MANUFACTURING COMPANY, Detroit, U. S. A.

We Specialize on
Finishing Crank Shafts
Only
MICHIGAN CRANK SHAFT CO., Lansing

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Ask Lewis about valves We make valves exclusively—special heat-treated valves that "stand up" in service. Don't take chances. For anything in valves, write
Lewis Electric Welding & Mfg. Co.
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Woodworth Treads
will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.
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PAT'S PEND'G
Know the Heat of Your Motor While Driving!
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Protect Builder and User Alike
Large European and American Plants Assure Prompt Deliveries.
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STAGGARD TREAD
The Tire Perfect!
The Republic Rubber Co. Youngstown, Ohio

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Specialists in **Spring Suspension** High Grade Only
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MILEAGE CONTEST $5,000 IN CASH PRIZES
For Full Particulars Address
AJAX-GRIEB RUBBER COMPANY, 1796 BROADWAY NEW YORK

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R. E. Olds' famous car—the leading car in its class. The latest model sells at $1,175, completely equipped—electric starter and electric lights. 30 to 35 horsepower.
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REO MOTOR COMPANY, - - Lansing, Mich.

The Otho SYSTEM for Self Starting Lighting Ignition Signalling
Is right Inside the Flywheel
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METZ "22" ROADSTER $475
The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor. Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."
METZ COMPANY, Waltham, Mass., U. S. A.

PENNSYLVANIA
Oilproof
VACUUM CUP TIRES
Making Their Mark Everywhere
Pennsylvania Rubber Company
Jeannette, Penn.
NON SKID

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

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Manufactured in Canada by
DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

Every motorist is a live prospect for a good vulcanizer



What This $2.00 Vul-Kit Will Do

Actually vulcanizes any tube puncture as well as the most elaborate plant could. Burns alcohol—or gasoline may be used for roadside repairs. No experience required to operate it.

SHALER Vulcanizers

Every motorist needs one. While the sale of most accessories is limited by the fact that they are furnished with the car, no car is equipped with a vulcanizer. No accessory has as little competition. The motorist must buy it from his dealer.

There are steam, electric and gasoline heated Shalers for every requirement—the only complete line in the world. Automatic temperature control on every model.

C. A. SHALER CO.

448 Fourth Street, Waupun, Wis.

The coupon will bring you a complimentary copy of our famous book, "Care and Repair of Tires," and dealers' proposition. Send for it today.

C. A. SHALER CO., 448 Fourth Street, Waupun, Wis.

If other dealers can sell them, we can. We are willing to be shown.

Name .....

Address .....

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order.
— In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR SALE—8 new 16 H.P. two-cylinder opposed engines with Remy magneto and battery ignition and forced feed oiling system. Cheap. Write FRANK HOAG, 91 Elm St., Cortland, Cortland Co., N. Y.

WANTED — By a large Minneapolis firm, Minnesota, North and South Dakota territory, for car selling between $700 and $850. Box 266, care Motor World.

PEERLESS AUTO BODY POLISH.
A brightener and restorer of life to all old varnished surfaces. Especially adapted for automobile bodies where the life of the varnish is worn out. THE COLUMBUS VARNISH CO., Columbus, Ohio.

PUBLIC SALE—WARREN AUTO CO.
These goods must be sold. Send for our Bargain Sheet.

$1.00	Warranted Spark Plugs..... $0.19
35.00	Gemmer Steering Gears..... 12.19
150.00	Rear Axles 42.00
350.00	Rear Axles and Transmissions.. 98.19
14.00	Wheels all kinds..... 3.00
75.00	Frames—all sizes 10.00
18.00	Carburetors 5.19
30.00	Windshields 8.19
85.00	Magnetos 25.00
65.00	Magnetos 20.00

Lamps, bodies, tops and everything for the automobile at a price listed on list of our 1,000 bargains.
WARREN MOTOR CAR CO.,
52 10th St., Detroit, Mich.

WANTED—Young man 25 years old, with six years' experience in automobile business, wants position with factory in sales or publicity department at factory, or will travel anywhere. Best references. Address A. J. F., care Motor World.

PEERLESS JET BLACK FENDER JAPAN.
A heavy bodied, high gloss finish enamel. Covers solid with one coat. Air dries in thirty-six hours. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR RENT—Second floor of garage for machine shop; 50 x 125; without any posts; elevator, gas and electricity; on main thoroughfare of Gary, Ind. Write DORMAN & SYKES, Gary, Ind.

PEERLESS EXTRA FINE BLACK JAPAN.
Air drying with a high gloss finish on all metal parts of automobiles. One coat covers solid requiring no primer or undercoat THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World.. Six words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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Owners or dealers; any state, county or city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebakers, Overlands, etc.
MOTOR LIST CO. OF AMERICA
230 News Arcade Des Moines, Iowa.

PEERLESS LAMP ENAMEL.
Dries in twelve hours with a high gloss finish on lamps, etc. One coat covers solid. If dull drying enamel is desired please specify. THE COLUMBUS VARNISH CO., Columbus, Ohio.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving Street, Rahway, N. J.

If you are seeking information about

Motor Cars or Motor Trucks

YOU'LL FIND IT IN

MOTOR WORLD

Published Every Thursday at 1600 Broadway, New York

TWO DOLLARS PER YEAR *Specimen Copies Gratis* TEN CENTS PER COPY

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Fiss, Doerr & Carroll Horse Company

East 24th St., Lexington to Third Ave.

Largest Dealers in Horses in the World

WILL CONDUCT AN

AUTOMOBILE AUCTION

BEGINNING THURSDAY, DECEMBER 4th

At 3 O'Clock P. M., and Every Thursday Thereafter

AT THE SAME HOUR,

In Sales Arenas, 139-151 East 24th St.

Cars of both the pleasure and business types will be accepted the day prior to sale for exhibition in the NEW, WELL LIGHTED, SPECIALLY DESIGNED ARENA adjoining regular sales ring and will be offered for disposal on the day designated

To the Highest Bidders, Without Reserve

A UNIFORM RATE OF

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Will be charged on all sales of $100 and over and a minimum fee of $5 on each car selling for less than $100.

An Unusual Opportunity to Buy or Sell

EITHER A USED OR NEW CAR FOR ANY PURPOSE.

CONSIGNMENTS SOLICITED

MAKE ENTRIES NOW FOR THE

First Big Auto Auction, Thursday, December 4th

WRITE FOR FURTHER PARTICULARS TO

FREDERICK WAGNER, President. Main Office, 155 E. 24th St.

Telephone, Madison Square 3100.

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY

CARTHAGE, OHIO

For anything in sheet metal that goes onto an automobile ask the

HAYES MANUFACTURING COMPANY

DETROIT, MICHIGAN

Largest Users of Sheet Metal in the World

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.

Buffalo, New York

AUTO-TOP FABRICS

OF EVERY DESCRIPTION

Samples and Prices on Request

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Guide **Motor Lamps**

(ELECTRIC)

Write for "Guide Books" Nos. 1 and 6

GUIDE MOTOR LAMP MFG. COMPANY

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Schafer Ball Bearings

Famous For Their Durability

BARTHEL & DALY, 42 Broadway, New York

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CABLE STRUCTUR

Automobile tires made of finest materials—best in quality. Built by hand very slowly. Give great mileage. Dealers, write for proposition.

THE MANSFIELD TIRE & RUBBER CO., Mansfield, O.

GOODYEAR

AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

Champion Priming Plugs

Start Motor Car, Motorcycle, Motor Boat or Stationary Motor, in the coldest, rawest days—and do it instantly.

$1.25 each at all dealers, or sent prepaid and guaranteed upon receipt of price.

Don't wait for cold weather; be ready for it.

CHAMPION SPARK PLUG CO.

196 Upton Avenue Toledo, Ohio, U. S. A.



UNITED STATES TIRES

ARE GOOD TIRES

Prest-O-Lite

is the most RELIABLE Lighting System

All the facts on all lighting systems mailed you on request.

The Prest-O-Lite Co., Inc, 287 Speedway INDIANAPOLIS, IND.

(Contributor to the Lincoln Highway)



A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

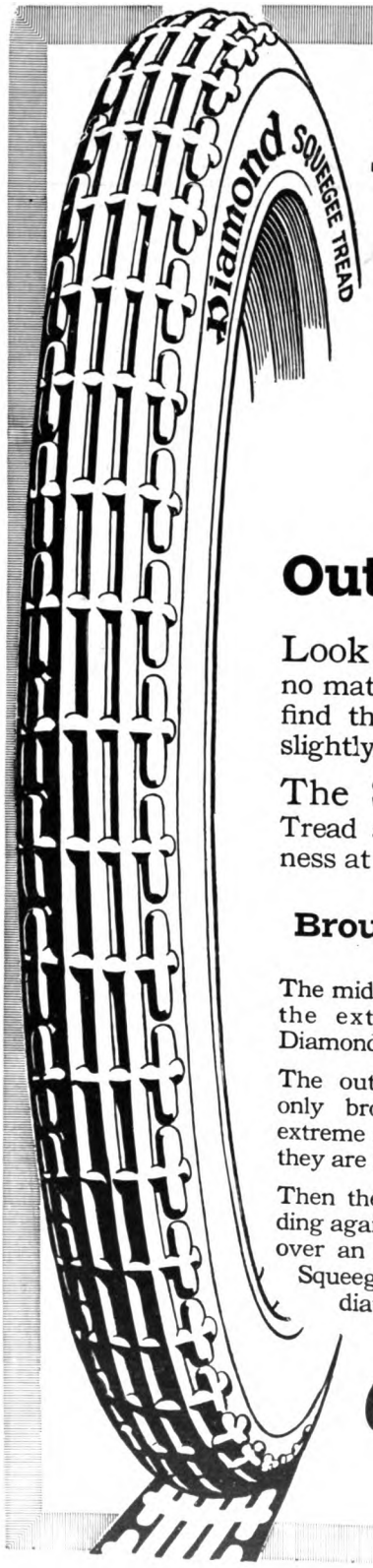
Send for Booklet 58

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

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They dig in and hold

Diamond

Vitalized Rubber Squeegee Tread Tires

Outside bars never wear off

Look at any Diamond Squeegee Tread Tire—no matter how much mileage it has delivered—and you will find that the *outside* Squeegee Bars are never more than slightly worn. They don't seem to be in use.

The Squeegee Bars on a Diamond Squeegee Tread are there to prevent skidding—and the extra thickness at the point of contact insures *more mileage.*

Brought into use for safety

The middle Squeegee Bars deliver the extra mileage for which Diamond Tires are noted

The outside Squeegee Bars are only brought into play at the extreme moment—but that's when they are needed.

Then there is a possibility of skidding against a truck, a curbstone or over an embankment, the outside Squeegee Bars come into immediate action and stop the skid before it gets under way.

Extra tough Vitalized Rubber Tread

The extra tough, thick tread will not break or chip off, because it is made of Vitalized Rubber—a rubber that is better for the purpose than Nature made it.

The Squeegee Bars stay firm, full shaped and ready for duty for a long time to come.

Diamond Squeegee Treads have solved the skidding problem for thousands of motorists—why not for you?

Ask for Diamond Tires

BEST FOR AUTOMOBILES, BICYCLES AND MOTORCYCLES

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The difference between an "ELECTRIC HORN" and a KLAXON

for the guidance of car-buyers

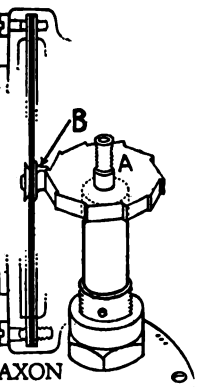
THE KLAXON is not an "electric horn." It is distinctly different both in principle of operation and in the character of its note.

The Klaxon is a noise machine. Its diaphragm is vibrated by a toothed wheel. This wheel is rotated by an electric motor; or, in the case of the Hand Klaxon, by a train of gears attaining high speed under pressure on the push-rod.

The diaphragm of the "electric horn" is vibrated by a "buzzer"—the same as that used for door bells and in pantries and offices. Each double vibration means a spark between two points. Unless these points are made of platinum irridium, the cost of which is prohibitive, they quickly wear off and the buzzer is useless.

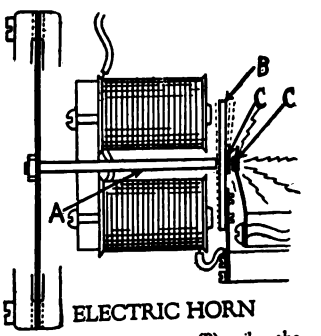
In the Klaxon, on the other hand, each double vibration means that one tooth of the glass-hard steel wheel slips past the glass-hard steel button on the diaphragm. The wear is too small to measure. The stability of the mechanism makes possible the Klaxon guarantee of permanently satisfactory service.

The Klaxon note is loud. It is sharp and clean-cut—totally unlike the nasal buzz of the "electric horn." One Klaxon "tiger" (a short abrupt note made by lightly touching the Klaxon push button) is more effective than a dozen "buzzes;" yet it makes less actual noise. Klaxon noise is concentrated—not drawn out.



KLAXON

The glass-hard toothed wheel (A) strikes the glass-hard button (B) on the diaphragm.



ELECTRIC HORN

The vibrating-armature (B) strikes the adjustable rod (A) which is attached to diaphragm, and breaks contact at points (C-C). Unless these points are made of platinum irridium, they soon wear down and the mechanism becomes inoperative

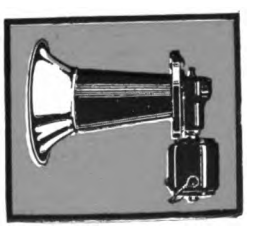


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory. Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy.

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STABILITY

When purchasing motor trucks, look for stability in the vehicles and in the maker. Bargain trucks mean something off in quality, service or design.

Packard truck prices are the fair prices that will insure the quality you want, the service you must have and the stability necessary to protect your investment.

Packard trucks are built in five sizes to suit the needs of any line of trade

Chassis—F. O. B. Detroit

2-ton	$2800	4-ton	$3550
3-ton	$3400	5-ton	$4500
6-ton	$4650		

We built and sold $4,000,000 worth of Packard trucks in the last year—the world's record for truck manufacture and truck sales

The maximum service quality is built into Packard cars and trucks

ASK THE MAN WHO OWNS ONE

Packard Motor Car Co., Detroit

LINCOLN HIGHWAY CONTRIBUTOR

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MOTOR WORLD

Trade Paper Giving the World's Motor New

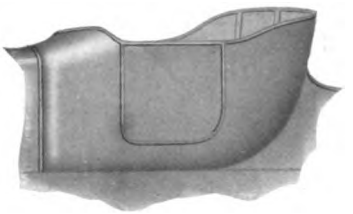
Vol. XXXVII
No. 12

New York, December 11, 1913

Ten cents a co
Two dollars a ye



Lionoil, Clear



Lionoil, French Gray



Lionoil, Black

A New Use For Lionoil—a Body Coat As Well As Rust Preventive

THE scope of Berry Brothers' Lionoil has been broadened to include new uses, besides being the ideal rust preventive for metal bodies and metal parts of all kinds.

We are now able to mix pigments with this oil which give it definite color and body and permit its use as a preliminary coat. Thus it serves not only to keep metal parts free from rust or corrosion, but it acts as an excellent primer or first coat, thus saving the time and materials ordinarily needed for this operation.

Three Ways to Use Lionoil

The illustrations show how Lionoil can be used on automobile bodies—(1) In the first picture the plain, transparent oil is put on simply as a rust preventive. This is the simplest use of Lionoil. (2) The middle picture shows a body coated with Lionoil of a French gray color. This can be considered a priming coat as well as a protection from rust. (3) The third illustration shows the effect produced when Lionoil is mixed with black pigment. This serves as an efficient first coat and is the most economical way to use Lionoil.

BERRY BROTHERS VARNISHES

Write us for particulars regarding this unusual rust preventive. We may help you find a way to improve your product and cut your finishing costs.

Factories:
Detroit, Mich.
Walkerville, Ont.
San Francisco, Cal.

BERRY BROTHERS
(INCORPORATED)
World's Largest Varnish Makers

Established 1858
Branches in principal cities of the world.

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A Shock Absorber that Automatically Gauges its Control to Meet Each Road Condition Separately

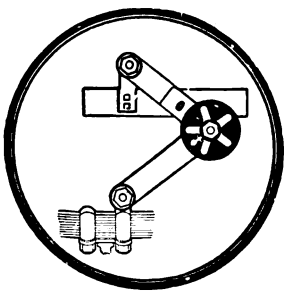
Graduated friction—the principle of the New Automatic Truffault-Hartford Stock Absorber—demonstrates its superiority over all other forms of shock absorption by supplying the correct proportion of control needed for each type of road.

Instead of exerting a constant resistance that is frequently either too strong or not strong enough, the New Automatic offers the exact resistance called for by the road over which the car is passing.

On smooth roads the New Automatic supplies just enough resistance to take care of the slight spring oscillation, generated mainly by the car's speed.

When a road of moderate roughness is encountered, the resistance is automatically increased to the amount accurately calculated to give absolute immunity from jar and vibration under this new condition.

And finally when the road becomes extremely bad or when ruts, bumps and other pronounced inequalities invite excessive spring jolts, the New Automatic responds with still greater resistance, insuring absolute comfort in spite of these drawbacks.



In all there are three separate and distinct controls or frictional tensions in the New Automatic Truffault-Hartford, each with an individual function to perform, and for this reason the amount of resistance is never more and never less than is actually called for.

The New Automatic embodies the only real improvement made in shock absorbers since the original Truffault-Hartford was introduced. It is simply a broader and better application of the proven Truffault-Hartford principle of frictional resistance, which has resulted not only in greater efficiency but in adaptibility to all types of springs. Whatever your car suspension, maximum comfort is assured by equipping with the

New Automatic

Truffault-Hartford
SHOCK ABSORBER

Write for descriptive circular on the New Automatic and learn to what great extent the Truffault-Hartford is effective in increasing your tire mileage and in lengthening the life of your car. Price of the New Automatic, $60 per set of four. Other Truffault-Hartfords, $50, 40, 25, $15.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay St., Jersey City, N. J.**

Manufacturers of Hartford Electric Lighting and Starting System

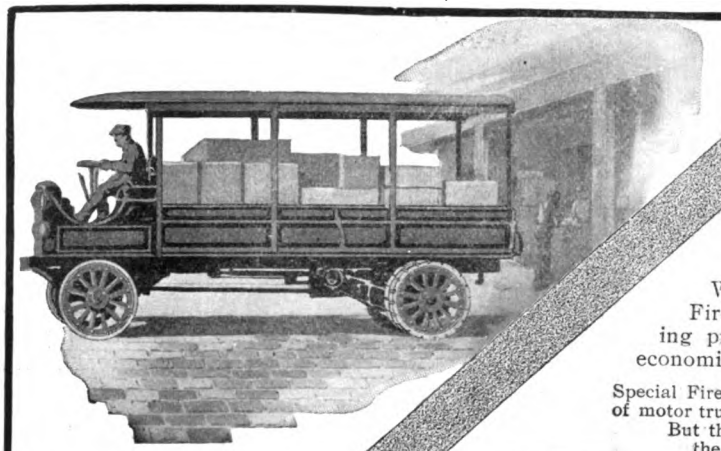
BRANCHES

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New York, 212-214 West 88th St.
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Newark—311 Halsey St.
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Dyke Motor Supply Co., Pittsburgh, Pa.
Reinhart Bros. Co., Inc., Minneapolis, Minn.
John Millen & Son, Montreal, Toronto, Winnipeg, Vancouver

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Business Building hangs on haulage, and the bigger your business the greater your need of Firestone Truck Service.

When your trucks have the benefit of Firestone Truck Tire Service your hauling problems are most scientifically and economically managed.

Special Firestone service stations are at the command of motor truck users in all the large cities of America. But the supremacy of Firestone is largely due to the fact that the Firestone Removable Equipment makes every driver *independent* of service to a very large extent.

This equipment is built to S. A. E. standard with interchangeable parts —all at your service instantly, insuring against truck troubles.

Firestone

TRUCK TIRES

Most Miles per Dollar

Are Made in Many Types

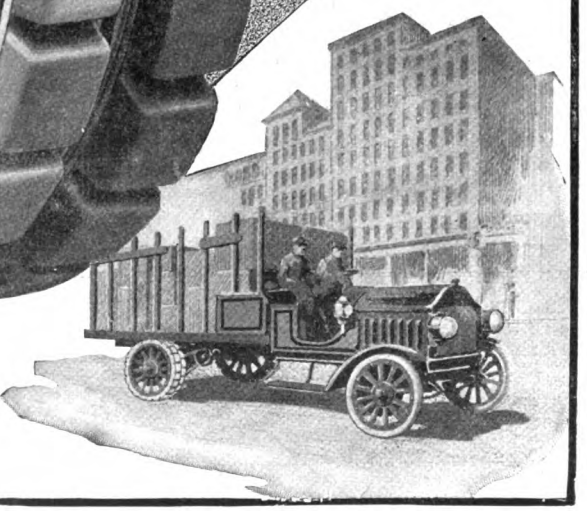
There is one for your truck, your loads, roads and special conditions of service.

The continuous base, notched tread tire, as shown here, is unrivalled for mileage and truck protection in general service for heavy duty.

Your requirements may be best met by an entirely different type. You may need the Channel Type, Hard Rubber Base, also shown here, or your requirements may call for the Special Electric Truck Tire, built for light battery efficiency.

In any case you need Firestone Quick Removable Rims. You need also the Firestone sureness and security in suiting the equipment to your special requirements.

Write for Truck Tire Catalog. Then call a Firestone man and let him advise with you.



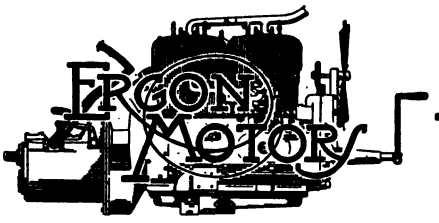
The Firestone Tire and Rubber Co.

Akron, Ohio—All Large Cities

"America's Largest Exclusive Tire and Rim Makers"

Pneumatic Tires, Truck Tires, Pleasure Electric Tires, Carriage Tires, Fire Apparatus Tires, Rims, Tire Accessories, etc.

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How About Deliveries?

DESIGN construction, power, performance—these are things capable of exact determination by engineers. They are or are not characteristic of a motor in the required degree. You can check them up to a certainty.

¶ But deliveries—Investigate ERGON MOTORS and, everything else being to your satisfaction, let our ability to meet your schedule exactly influence you.

Hazard Motor Mfg. Co.
Rochester, N. Y.

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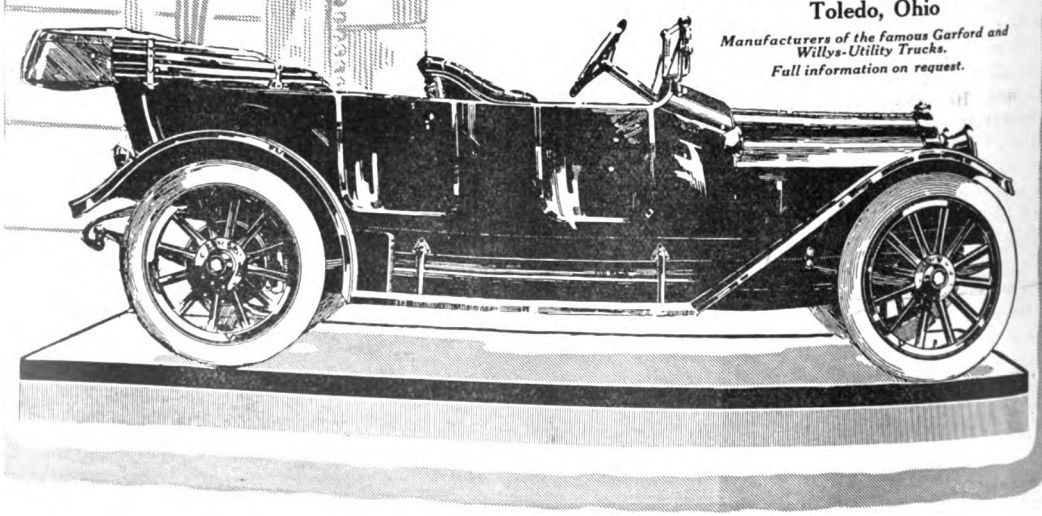
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Toledo, Ohio

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MOTOR WORLD

Vol. XXXVII New York, U. S. A., Thursday, December 11, 1913 No. 12

GERBER ASSUMES PRESIDENCY OF ABBOTT AND SEEKS MORE

Despite Repeated Rebuffs, Pittsburgher Still Hopes to Secure Michigan Buggy Plant—Change in Abbott Name and Car.

Following the retirement of A. C. Shafer as president and general manager of the Abbott Motor Co., of Detroit, and Leslie Sanders as sales manager, Edward F. Gerber, the Pittsburgher who purchased the Abbott property, has assumed all of those offices and hereafter will be superactive in the affairs of the company, the name of which has been changed to Abbott Motor Car Co. It is Gerber's intention to spend at least four days out of each week in Detroit.

When interviewed in Detroit, Gerber reiterated what was stated in Motor World last week—i. e., that although his name does not appear, he is interested in one of the bids for the R. C. H. plant in Detroit and, what is even more surprising, he added that, despite repeated rebuffs and the rejection of his several bids, he is still endeavoring to acquire the plant of the Michigan Buggy Co. in Kalamazoo, whose cars and buggies he handled in several States in the East and in whose affairs he figured as one of the largest debtors. He stated that a number of Kalamazoo bankers are working with him to that end.

Gerber also stated that he had signed up 305 of the former Michigan agents who hereafter will handle the Abbott, their orders accounting for 1,400 cars which, with 2,000 already contracted for by Abbott agents, will assure a production of not less than 3,500 Abbott cars for the market during the 1914 season.

While no mechanical changes have been made in the Abbott "four," a new and more attractive body has been adopted and several items of equipment added. It is expected that the Abbott "six" will be ready in the spring. M. J. Hammers will have charge of the production end of the business.

Henderson Tire Has Shares for Dealers.

Others having tried it and made no great progress has not served to dissuade the Henderson Tire Co., of Buffalo, N. Y., from believing that selling stock to dealers is one way of reducing the price of tires and solving other problems. At any rate, the company, which was incorporated last week with an authorized capital of $400,000, proposes to give automobile dealers a chance to invest in its shares and to "sell tires at lower prices than ever have been sold before," or something to that effect. Such Henderson tires as have been purchased to date have been manufactured under contract by the Northland Rubber Co., of Buffalo, which, however, is in no way identified with the Henderson enterprise. The latter is casting around for a factory of its own.

Benz-Froehlich Suits Reach Far South.

Although Walter Maas, who at one time was secretary of the Benz Auto Import Co., is in Buenos Aires, he is to be called on to testify in the fraud actions which Benz & Cie., of Mannheim, Germany, filed a year ago in the Supreme Court for New York county against Jesse Froehlich and David and Oscar Weingarten; Maas was secretary at the time Froelich and the Weingartens owned the company and before they sold out to the Germany Benz concern. The fraud charges grew out of this sale. The court this week granted an order for a commission to take testimony in Buenos Aires and it is probable that a Buenos Aires attorney will be engaged by the Benz interests to handle the matter there.

Canfield License for Red Head Plugs.

The Emil Grossman Mfg. Co., of Brooklyn, N. Y., maker of Red Head plugs, has been granted a license under the Canfield patent. This brings the number of plug manufacturers licensed by A. R. Mosler & Co., owners of the patent, to 11.

COURTS DISAGREE REGARDING NUMBER OF POPE RECEIVERS

Federal Judge in Massachusetts Names a Third Man—Connecticut Court Says One, Colonel George Pope, Is Sufficient.

Despite opposition, Charles A. Persons, head of a Worcester bicycle saddle company which bears his name, is now a co-receiver of the Pope Mfg. Co., so far as its Massachusetts assets are concerned. He was named by Judge Aldrich in the Federal court in Boston on Thursday last, 4th inst., and will act with Col. George Pope and Charles A. Morss in the administration of Pope affairs in the Bay State.

Persons's appointment was urged by the Massachusetts stockholders' protective committee, which has obtained control of more than 50 per cent. of the Pope stock, and what is expected of Persons was indicated by the committee's counsel, who declared "we want a receiver who will find out what conditions are at the property and just what the stockholders ought to do."

Two days later, in the Connecticut Superior Court in Hartford, the effort to have Morss and Persons appointed coreceivers in that State was renewed, but, after hearing all sides, Judge Case reserved decision, and after long consideration he yesterday refused to appoint them, thereby leaving Col. Pope in sole charge in Connecticut.

Col. George Pope believes he is capable of filling the office of receiver without assistance, and his counsel, A. L. Shipman, opposed the appointment of Morss and Persons. Among other things, he stated that Col. Pope had been ordered to advance funds for the operation of the plant in Westfield, Mass., and that later the Massachusetts people obtained an injunction preventing the Connecticut receiver taking anything from Westfield, to which some Connecticut property had been removed.

Col. Pope desires, said Mr. Shipman, to

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be confirmed alone as temporary receiver and to be allowed to conduct the plant in Hartford and not interfere with any reorganization of the company.

Shipman said that the monthly report of Receiver Pope showed that the Connecticut receivership is $43,000 better off than when he was appointed.

Shipman's attitude was supported by Judge Henney, representing the merchandise creditors' committee, of which Clarence E. Whitney is chairman, and who maintained that it is an unnecessary expense to have three receivers in Connecticut; if there is to be a "board of receivers," Judge Henny thought the merchandise creditors are entitled to one member. Lucius F. Robinson, representing a party of Connecticut stockholders, also deprecated the appointment of two co-receivers and in doing so pointed out that two of the men know nothing of the automobile business.

On the other hand, Edward E. Blodgett, of Boston, who said he represented more than half of the Pope creditors, in urging the appointment of three receivers, declared that the banking creditors did not believe that Col. Pope alone could make the automobile business pay. He declared there are two questions involved—one as to whether the automobile business in Hartford, which has not paid, can be made to pay, and whether the bicycle business at Westfield, which has paid, can be made to pay more, and whether the company shall be reorganized.

C. C. Barton, of Boston, representing a second Massachusetts stockholders' protective committee, headed by Allen Forbes, spoke for three Connecticut receivers, and pointed out that Judge Aldrich of the Federal court in Massachusetts was desirous that the Connecticut court take the same view of the matter that he had and that three stockholders be appointed in Connecticut and the receiverships be conducted in harmony. No objection, he said, could be offered except the matter of expense, and in a business of this size that should not be considered.

Incidentally, in the proceedings in the Federal court in Boston it was brought out that the Pope company has enough money to pay all creditors and have something left for the stockholders, also that a reorganization of the company is likely.

The Massachusetts receivers already have filed their first report, in which they say the Westfield business appears to be profitable and the plant in good condition, but that they have not yet arrived at the liabilities. They have asked the court for authority to issue receivers' certificates to the sum of $150,000 to meet the costs of materials and manufacture until April 1st, when the returns from sales come in.

BROKEN FAITH AND BROKEN CONTRACT CHARGED IN SUIT

Lichtenstein Demands $17,000 for Regals That Were Not Delivered—Regal Claims Injurious Advertising and Rumor-Starting.

The differences of Julius Lichtenstein, of New York City, and the Regal Motor Car Co., of Detroit, may appear of small proportions to the litigants, but the Supreme Court for New York county evidently failed to believe the dispute could be crowded into two hours and this week, therefore, declined to permit the action brought by Lichtenstein to be set down for the short cause calendar.

The trouble grew out of a contract made by Lichtenstein December 18, 1912, with the Regal company whereby he was to buy 275 cars, which were to have been delivered at the rate of 75 cars a month, beginning January 1, 1913, certain restrictions concerning the manner of advertising the cars also being imposed.

Lichtenstein put up a deposit of $5,000 and claims that when the company had delivered 225 cars it stopped deliveries, which damaged him, he states, to the extent of $16,250, to which he adds $1,000 of the deposit that he says was not returned, making a total of $17,250.

In answer, the Regal company states that Lichtenstein disregarded the stipulation as to the way he was to advertise the cars, that he advertised and disposed of them in a manner injurious to the Regal company and circulated reports derogatory to the financial standing of the Regal company. It claims, also, that the shipments were stopped in accordance with a supplementary contract.

Jesco Starter "Invades" the East.

The Jesco Equipment Co., which was incorporated several weeks since under the laws of New York and of which F. E. Moskovics is president, has leased the eighth floor of the new building 245 West 55th street, where a complete plant for the installation of Jesco starters has been set up. George W. Wacker, formerly of the Sims Magneto Co., is general manager of the establishment, which is, in fact, the Eastern branch of the Jones Electric Starter Co., of Chicago, of which Moskovics is secretary.

Daimler-Repairman Suit is Discontinued.

That long-standing suit of the Daimler Motoren Gesellshaft, of Unterturkheim, Germany, in the Supreme Court for New York county, to restrain the Mercedes Repair Co., of New York City, from using the name Mercedes in connection with the business has been discontinued; the Daimler company, which manufactures Mercedes cars, effected an arrangement whereby it will permit the repair company to continue to use the Mercedes name.

Moore Truck Gets Plant in Delaware.

The Moore Motor Truck Co., which has been doing business in a small way in Philadelphia, has leased a former cement products plant in Wilmington, Del., and will take possession at once. It plans to produce 350 trucks for the 1914 market. The officers of the company are: Thomas E. Moore, former vice-president and general manager of the Bowling Green (O.) Motor Co., president; Samuel L. Dillon, of the Wilmington Sash, Door & Blind Co, vice-president; Frank B. Adams, an officer of the Kratzer Steel Co., of Pittsburgh, treasurer; George W. Brewer, secretary and assistant treasurer; C. L. Dambler, sales manager.

Avery Begins Making "Disappearing" Tops

The Automobile Roll Top Co., recently organized in Milwaukee by Percy C. Avery to manufacture and market a "disappearing" top, has established headquarters in the new Overland building at 510-516 Broadway, Milwaukee. Officers have been elected as follows: President, George W. Browne; vice-president, August A. Jonas; secretary-treasurer, P. C. Avery. Browne is state distributor for the Overland and Stutz and Jonas is well known as Cadillac agent. Avery himself is the man who originated the Prest-O-Lite system. The new company is capitalized at $50,000.

Packard Authorized to Sell Stock Issue.

The Packard Motor Car Co., of Detroit, has been authorized by the Michigan Securities Commission to dispose of $1,000,000 of its common stock and $3,000,000 of its preferred. These amounts represent two-thirds of the $6,000,000 which the Packard company added to its $10,000,000 capitalization in October last. At that time $2,000,000 of the new common was given to the stockholders in the form of a stock dividend and the remaining $4,000,000, the sale of which just has been authorized, was retained as treasury stock "to be placed with selected purchasers not identified with the company."

Rowe Finds More Room in Downington.

The Rowe Motor Mfg. Co., which produced the truck of that name in Coatesville, Pa., has removed to Downington in the same State. It has acquired a larger factory in the latter place, where all business is now being conducted.

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JOHNS-MANVILLE ACQUIRES CONTROL OF MORE PRODUCTS

Takes Over Sale of Spark-No Lock and Arnold's Electric Wares—Former a Dash Alarm Against Motor Car Thieves.

Further indication that the automobile accessory department recently established by the big H. W. Johns-Manville Co., of New York, is to deal with practically all items of equipment, was made even plainer this week, when it became known that the company had acquired control of the outputs of Spark-No locks, made by the Swyers & Lorch Mfg. Co., of Pittsburgh, Pa., and the electric heating plugs and electric vaporizers made by the Arnold Electric Co., of Boston, Mass.

While the Arnold products are not unknown to the trade, the Spark-No Lock is a recent development, and is probably the most remarkable of the many devices designed to prevent the theft of cars. As its title indicates, its purpose is to lock the ignition system, with which, of course, it is connected. It is affixed to the dash of a car and is of clock-like appearance—indeed, it is substantially an alarm clock capable of many combinations. When tampered with by anyone not knowing the combination, a bell alarm is immediately sounded.

Of the Arnold devices, the electric heating plug, or, rather, plugs—for two are required—are designed to be set in the gas manifold and connected with a battery and a special resistance coil which develops a very high degree of heat in a very short space of time, the heat more readily vaporizing the gasolene and thereby permitting motors to be started quickly in cold weather. The Arnold electric vaporizer is designed for the same purpose, but it consists of a hollow electric heating coil connected to the carburetter intake.

R. C. H. Sale Postponed Once More.

Final disposition of the bankrupt R. C. H. Corporation's plant in Detroit has been postponed by the trustee until Saturday, 20th inst. Harris Bros. & Co., of Chicago, have let it be known that they are ready to increase by $5,000 the separate bids of the Lincoln Realty Co., of $105,000, for the real estate, and C. J. O'Hara and W. J. Baird, of $190,000, for the personal property. These three bidders, however, in order to meet objections presented by the creditors who, as stated in last week's Motor World, checked the sale, have pooled issues and formed the Todd-Frank-Friedburg Co., which has or will submit a single bid for both the personal property and real estate, but, as stated, the trustee will make no decision until the 20th inst.

Name Committee in Dean Reorganization.

Growing out of the call issued by A. L. Garford for a meeting of the creditors of the Dean Electric Co., of Elyria, Ohio, a committee representing both the bond holders and general creditors, was appointed on Friday last to cooperate with the Dean management in the reorganization of the company. Garford will represent the banking creditors, E. F. Allen the bond holders and J. M. Lenz, of Rinzel, Lenz & Co., Chicago, the merchandise creditors.

Gets Judgment Against Inter-State.

Judgment for $3,461.28 was taken this week in the Supreme Court for New York county by Col. Kirby C. Pardee, former Inter-State dealer in the metropolitan district, against the Inter-State Automobile Co., of Muncie, Ind. Col. Pardee claimed this amount as commissions on cars sold in his territory by the manufacturer. The sales consisted of cars tendered New York creditors in payment of claims prior to the failure of the Inter-State company.

Page Relinquishes Stevens-Duryea Office.

I. H. Page, who two years since relinquished the presidency of the Stevens-Duryea Co., of Chicopee Falls, Mass., to W. H. Whiteside, whilst retaining the office of treasurer, retired from the latter also at the annual meeting of the company held last week. His successor, apparently, has not yet been named. President Whiteside and the other officers were reelected. They are J. Frank Duryea, vice-president, and W. M. Remington, clerk.

C. P. Henderson Joins Regal Staff.

Rumors which were afloat at the time of the semi-reorganization of the Henderson Motor Car Co., of Indianapolis, two months ago, to the effect that Charles P. Henderson would quit the presidency and join a Detroit company, have rather tardily come true. Henderson made the change this week when he was elected vice-president of the Regal Motor Car Co., of Detroit, and assumed charge of the sales department.

Junkman Buys Parts for Michigan Cars.

Nathan Gumbinsky, a Kalamazoo junkman, purchased the parts on hand and goodwill of the Michigan Motor Car Co., when that portion of the Michigan Buggy Co.'s assets were auctioned on Tuesday last. He paid $10,500 for the stuff and may or may not continue the sale of the parts for the convenience of Michigan car owners. All bids for the real estate were rejected because they were too low.

ST. LOUIS MEN AT HEAD OF REORGANIZED WAHL COMPANY

Root, Former Southern Distributer, is President—Hazard Motor Man a Director—Car to be Continued at Former Price of $890.

Reorganization of the Wahl Motor Co., of Detroit, which has been in progress since the tragic death of its manager, George J, Wahl, October 5th last, finally has been effected, St. Louis men largely being the responsible parties. One of them, G. A. Root, who had the distribution of Wahl cars for practically all of the Southern States, has been elected president of the new corporation, which is capitalized at $85,000; J. K. Nulson and A. G. Nulson, Jr., also of St. Louis, are, respectively, vice-president and secretary-treasurer. The former is the head of the Nulson-Klein-Kraus Mfg. Co., of St. Louis. M. B. Lahey, former Michigan branch manager for the Ford Motor Co., is sales manager of the new Wahl company and Frank Rose superintendent; the latter had experience with the Lozier Motor Co. but latterly has been acting as superintendent of the Federal Motor Truck Co., of Detroit.

In addition to Root and the Messrs. Nulson, the board of directors consists of O. L. Barger, of the Hazard Motor Co., of Rochester, N. Y., and E. L. Beebe, of St. Louis, Barger being the chairman of the board.

The Wahl company next week will take possession of the factory building on North Grand Boulevard, East, near Viaduct, which wes previously occupied by the Warren Capsul Co. There will be few, if any, changes made in the Wahl car, as designed by the former regime; it will continue to list at $890. Contracts already are in hand for 4,750 cars.

Flyer and Howard Discontinue Relations.

Having completed arrangements for the acquirement of a factory in Mount Clemens, Mich., the Flyer Motor Car Co., of Detroit, has discontinued relations with the Thomas Howard Co., of Brooklyn, N. Y., which, several months ago, it was authoritatively stated, would market the Flyer output. Instead, the company itself will handle the production from the factory in Mount Clemens.

Reports that the price of the Flyer car would be increased from $495 to $550 are officially denied. The $495 price will include electric lights, storage battery and speedometer, and for an additional $100 a complete Ward-Leonard electric lighting and starting system will be supplied.

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McKINLEY BOYLE FOLLOWS HIS COMPANY TO FAILURE

Head of Atlantic Vehicle Files Petition in Bankruptcy—Liabilities Nearly $100,000—$50,000 Note Held by Wall Street Men.

McKinley Boyle, president of the Atlantic Vehicle Co., of New York, which went into the hands of a receiver a month ago, filed a personal petition in bankruptcy Saturday, 6th inst., in the Federal court in New York City; his liabilities are $94,951.41 and his assets, aside from stock and paper of nominal value, $875. When he came to New York he was president of the Louisville, New Albany & Corydon Railroad, which figures in his schedules.

Among the secured creditors are: J. P. Morgan & Co., $25,235, note given September 1, 1913, due March 1, 1914, secured by Atlantic Vehicle stock; Corydon National Bank, of Corydon, Ind., $8,065; Commercial Bank & Trust Co., of Louisville, Ky., $2,514; Powhattan Woolridge, Louisville, $2,000. He lists as a creditor the F. R. Wood-W. H. Dolson Co. for $525.54, the rent of his apartment in the Belnord for November and December of this year.

His unsecured creditors have claims totaling $1,914.29 and include such as: Mme. Irene, corsets, $30; A. Nihlen, shoes, $16; Mason-Seaman Transportation Co., cab service, $24.50; Momas Laundry Co., $16.04; Dr. Harry D. Johnson, medical service, $68; William Knudson, eyeglasses, $15; and Metropolitan Dye Works, cleaning, $9.15.

He endorsed a note of the Atlantic Vehicle Co., $50,000, held by the Harriman National Bank, H. S. Vanderbilt, W. Earl Dodge and Ralph Sanger, the latter an officer of the Atlantic Vehicle Co. His assets, aside from $740 worth of stock in the Louisville, New Albany & Corydon Railroad and the Continental Can Equipment Co., consist of: Clothing, underclothing, etc., $75; watch and chain, $20; three stick pins, $15; studs, $10, and cuff buttons, $15.

Bankrupt's Vice-President Saves $14,000.

The alleged fraudulent bankruptcy of the Auto Specialty Co., of Kansas City, whose president was sentenced to three years in jail last week, was given a further airing when Trustee in Bankruptcy J. M. Jones sought unsuccessfully to make Alfred Wendover, the former vice-president, pay over to him $14,000; the trustee claimed this amount was paid to the Southwest National Bank of Commerce as a preferential payment. Wendover endorsed the note, and had the case gone against him he would have been obliged to repay the $14,000 and take his chances with the rest of the creditors. The court, however, decided that the evidence was not sufficient to be presented to the jury.

Indian's Comptroller Wants His Salary.

Just why he didn't get the money is not made clear in a suit which Marshall Lapham, former comptroller of the Indian Refining Co., filed this week in the Supreme Court for New York county against that corporation; he demands $9,583.34. He states that he contracted November 15, 1911, as comptroller at a salary of $10,000 a year and that the contract was continued for the year beginning November 15, 1912. However, he claims that of his 1912-1913 salary he was paid but $416.66, his salary for the last half of November, 1912.

Saunders's English Company "Goes Broke."

Leslie R. Saunders Co., Ltd., of London, which was organized by Leslie R. Saunders, of Detroit, twelve months ago, is being wound up by a receiver. Its liabilities are $6,600 and its assets, after deducting preferential claims, $3,500. The company was formed to manufacture Saunders's gasolene saving device, for the English rights to which the London company gave $13,000 and 2,149 paid up shares for services rendered.

Voorhees in Pursuit of Corning Man.

An action for $66.40 was filed this week in the Supreme Court for New York county by the Voorhees Rubber Mfg. Co., of Jersey City, against T. E. O'Brien, of 64 West Market street, Corning, N. Y. It is charged that goods to the value of $129.80 were supplied between June 15 and August 21, 1913, and that but $63.40 has been paid.

McGuinness Wins Standard Oil Attention.

Joseph McGuinness, of Laurel Hill, N. Y., is the defendant in an action brought this week in the Supreme Court for New York county by the Standard Oil Co. It demands $574.16 for goods supplied between July 2 and October 3, of this year. The amount originally was $577.26, but McGuinness paid $3.10.

Another Dividend for Warren Creditors.

In addition to the 10 per cent. it has already paid, creditors of the Warren Motor Car Co., of Detroit, will receive an additional dividend of 5 per cent., the receiver having on hand $63,376 for the purposes of distribution. The Warren property brought $135,088.40, which is $11,000 more than its appraised value.

The Detroit Steering Wheel & Wind Shield Co. has changed its name to the Metalwood Mfg. Co.

GOODYEAR'S 1913 BUSINESS SHOWS GAIN OF $7,000,000

Total is $32,000,000, but Strike and Flood Make Earnings $1,000,000 Less—Nearly a Million Goes to Surplus—Officers Reelected.

During the fiscal year ending October 31st last, the gross business of the Goodyear Tire & Rubber Co., of Akron, O., amounted to $32,500,000, as against $25,232,000 during the preceding twelve months. The net earnings, although in excess of $2,000,000, did not equal the profits of the 1912 year, which were $3,001,000, the reduction in tire prices and the effects of the fierce strike of the rubber workers, to say nothing of the disastrous spring flood, naturally showing their effects. These facts and figures were brought out at the annual meeting of the company last week, when all of the officers and directors were reelected.

Apart from its profits, the Goodyear company was shown to be in good condition, $963,182 having been added to its surplus account, and its total assets standing at $18,858,251, an increase of $5,040,037. The balance sheet for the fiscal year, and how it compares with the report of the previous fiscal year, is as follows:

Assets.

	1913.	Increase.
Real estate and buildings	$3,493,536	*$362,833
Machinery and fixtures	2,857,714	2,857,714
Patents etc	1	.....
Securities owned	804,904	314,829
Notes receivable	136,882	*75,707
Investments	4,117,087	899,129
Bills and accounts receivable	4,117,087	899,129
Advances to agents, etc.	137,314	137,314
Cash	1,141,220	*127,320
Advances to subsidiary comp's	719,313	719,313
Suspense items	430,156	234,592
Rentals, insurance, etc.	342,698	163,165
Totals	$18,858,251	$5,040,037

Liabilities.

Preferred stock	$5,000,000	.....
Common stock	5,033,800	$7,100
Accounts payable	983,990	*132,416
Notes payable	3,653,000	3,653,000
Doubtful accounts	508,482	247,821
Depreciation	858,908	382,151
Surplus	2,820,071	963,182
Totals	$18,858,251	$5,040,037

*Decrease.

The officers reelected were: F. A. Seiberling, president; C. W. Seiberling, vice-president; G. M. Stadelman, secretary; F. H. Adams, treasurer.

Texas and Albany Concern in Litigation.

The Northern Motor Car Co., of 78 Central avenue, Albany, N. Y., is claimed by the Texas Co. to be a debtor to the extent of $801.94; suit for this amount was filed this week in the Supreme Court in New York

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The Week's Incorporations

Reading, Pa.—Dile Motor Car Co., under Pennsylvania laws; authorized capital, $20,000.

Niles, O.—Niles Auto & Machine Co., under Ohio laws; to repair and build motor cars. Corporators—H. A. Wilson and R. G. Adams.

Detroit, Mich.—Redable Tire Co., under Michigan laws; authorized capital, $4,000. Corporators—L. A. Shapiro, W. F. Furney and others.

Houston, Tex.—Carr Motor Co., under Texas laws; authorized capital, $10,000. Corporators—Robert C. Carr, Robert E. Goree and A. G. Ruggles.

Detroit, Mich.—Automobile Specialties Co., under Michigan laws; authorized capital, $2,000. Corporators—Elliott B. Joy, Paul H. Beese and others.

Eau Clair, Mich.—Northwestern Motor Co., under Michigan laws; authorized capital, $25,000. Corporators—Kim Rosholt, T. W. Rosholt and R. R. Rosholt.

Hartford, Conn.—Brassil Auto Service Co., under Connecticut laws; authorized capital, $1,500. Corporators—Lewis Morgan, Frank A. Brassil and Mary Brassil.

Oshkosh, Wis.—Winnebago County Auto Co., under Wisconsin laws; authorized capital, $8,000. Corporators—F. C. Behlendorf, G. E. Steiner and Mary Behlendorf.

Huntington, Cal.—Huntington Hotel Garage Co., under California laws; authorized capital, $25,000. Corporators—W. R. Covington, C. A. Bonyun and C. L. Goodman.

Albany, N. Y.—Mack Motor Truck Co., under New York laws; authorized capital, $10,000. Corporators—Arthur J. Cook, Wm. A. Hamilton and Mae C. Fitzgerald, all of Albany.

Boston ,Mass.—Shawmut Electrical Signal Co., under Massachusetts laws; authorized capital, $300,000. Corporators—J. B. Clogher, J. M. West and E. L. Parsons, all of Boston.

Renton, Wash.—Renton Auto Tire Co., under Washington laws; authorized capital, $4,000. Corporators—Hugh B. Campbell, James L. Morfoot, Jesse F. Spurfeon and Joe Wood.

Lansing, Mich.—Lansing Rubber Co., under Michigan laws; authorized capital, $75,000. Corporators—W. M. Shepherd, Detroit; Arthur C. Haite and Frank Preuss, both of Lansing.

Ft. Wayne, Ind.—Ft. Wayne Auto Supply Co., under Indiana laws; authorized capital, $50,000; to conduct a general motor vehicle business. Corporators—J. M. Carmer, J. A. Brewer and H. H. Criswell.

Chicago, Ill.—Mackey-Culehen Motor Co., under Illinois laws; authorized capital, $5,000; to deal in motor cars and accessories. Corporators—N. W. Mackey, J. Max Culehen and F. De Young.

North Vernon, Ind.—Robinson Machine Co., under Indiana laws; authorized capital, $3,000; to deal in motor car accessories. Corporators—Thomas A. Robinson, Martin W. Brogan and Ida M. Brogan.

Manchester, N. H.—Aalding Supply Co., under New Hampshire laws; authorized capital, $15,000; to deal in motor vehicles of all kinds. Corporators—Carl D. Johnston, Hugh D. O'Dowd and others.

Brooklyn, N. Y.—Borough Park Taxi Co., under New York laws; authorized capital, $5,100. Corporators—Stefano and Diego Chiarello, both of 1528 42nd street; Joseph Greenberg, 1353 40th street.

South Bend, Ind.—Coliseum Garage & Machine Co., under Indiana laws; authorized capital, $10,000; to conduct a general automobile business. Corporators—John Walz, W. P. Furey and J. E. Peak.

Pierre, So. Dak.—Vaughan-Harris Co., under South Dakota laws; authorized capital, $25,000; to manufacture a radius rod truss for motor cars. Corporators—M. A. and R. E. Vaughan and George O. Harris.

Schenectady, N. Y.—MacDonald Garage Co., under New York laws; authorized capital, $10,000; to operate a garage. Corporators—Robt. MacDonald, Pliny Spaulding and Arthur D. Atwood, all of Schenectady.

Gloversville, N. Y.—Gloversville Motor Car Co., under New York laws; authorized capital, $15,000. Corporators—Mortimer B. Everest, 41 Grand street; John W. Sisson and Lillian B. Sisson, both of 5 Division street.

New York, N. Y.—Puncture-proof Double Tire Co., under New York laws; authorized capital, $500. Corporators—Max D. Ancel, 944 Kelly street; Nathan Cranston, 3 West 113th street; Joseph Siskind, 77 East 119th street.

New York, N. Y.—Pennsylvania Taxi Co., under New York laws; authorized capital, $14,000. Corporators—Pancrazio Grassi, 1170 Broadway; Pasquale Coviello, 504 West 39th street; John E. Mona, 189 9th avenue.

New York, N. Y.—Convertible Automobile Body Corporation, under New York laws; authorized capital, $250,000. Corporators—Ladis Lewkowitz, 19 East 48th street; Eugene L. Gottlieb, 140 Nassau street; Mary Kaplan, 229 Third avenue.

Buffalo, N. Y.—Henderson Tire Co., under New York laws; authorized capital, $400,000; to manufacture tires, tubes, etc. Corporators—Chester O. Henderson, 133 Kingston avenue; Ralph R. Hillman, Ellicott square; Alfred L. Lyth, 48 West Eagle street.

Elmhurst, N. Y.—Lemmey Garage, under New York laws; authorized capital, $2,000; to operate a garage. Corporators—Charles A. Burr, 261 Broadway, New York; Emma A. Dietze, 325 East 52nd street, New York; John J. Phelan, 11 West 106th street, New York.

Ossining, N. Y.—Higrade Body Building Co., under New York laws; authorized capital, $5,000; to build automobile bodies, etc. Corporators—J. Banks Tillottson, Todd place; James A. Cuff, 508 W. 132nd street, New York; R. W. Yates, 519 West 137th street, New York.

Columbus, O.—Herreshoff Motor Co., under Ohio laws; authorized capital, $5,000; to deal in motor cars and accessories. Corporators—O. M. Dickenson, John F. Ward, William C. Benham, Jr., Dellsis D. Sibley and James M. Loren.

New York, N. Y.—Motor Cooling Co., under New York laws; authorized capital, $10,000; to manufacture compounds for cleaning automobile rediators. Corporators—Charles R. Allison and Marie F. Clarke, both of 10 East 130th street; William J. F. Lammer, Elizabeth, N. J.

New York, N. Y.—John D. Cogan Co., under New York laws; authorized capital, $1,000; to deal in automobile bodies. Corporators—Frank H. Twyeffort, 286 St. Johns place, Brooklyn; Charles E. Healy, 722 St. Nicholas avenue, New York; Ernest J. Ellenwood, 34 Maple street, Brooklyn.

Brooklyn, N. Y.—Inter-State Accessories Corporation, under New York laws; author-

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ized capital, $10,000; to deal in parts for motor cars. Corporators—Leon Kauffman, 54 West 157th street, New York; Stewart M. Kohn, 17 Battery place, New York; Albert Strauss, New York.

Changes Among Prominent Tradesmen.

W. S. Parrish, for the past three years factory manager of the Kirkham Motor Mfg. Co., of Bath, N. Y., has resigned that post. He has not yet made a new connection.

G. O. Bristol has been appointed manager of the commercial tire department of the Motz Tire & Rubber Co., of Akron, O. Previously he was attached to the Motz branch in Chicago.

Earle Stone, chief engineer of the Wheeler & Schebler Co., of Indianapolis, has been transferred to Detroit, where he has assumed charge of the branch. He succeeds James Ryan, resigned.

F. E. Davis, for several years one of the Abbott Motor Co.'s engineers, has organized the F. E. Davis Engineering Co., in Detroit, and will handle several accessories. He already has secured the Detroit representation for the Kemco electric fan generator.

Edward McK. Hunt has been appointed Eastern district manager of the Stewart Motor Corporation, of Buffalo. He will travel the Eastern States in the interests of the Stewart truck, but will nevertheless retain his interests in the Ingels-Hunt Motor Co., of Newark, N. J.

C. W. Matheson, founder of the defunct Matheson Automobile Co., who several months since became Western manager of the Palmer & Singer Mfg. Co., with headquarters in Chicago, has been transferred to the factory in Long Island City, where he has assumed the duties of general sales and advertising manager. He thereby relieves S. P. Woodard, secretary of the company, of those duties.

Threatening to Build Tires in Texas.

Texas Climatic Tire Mfg. Co. is the style of a new enterprise which is being organized in San Antonio and which threatens to build a tire factory in that city. F. T. Parks is its chief sponsor.

To Make One-Man Tops in Detroit.

The Wiley-Postal Top Co. has been formed in Detroit with Harry W. Wiley as president and Charles Postal as secretary-treasurer. It will produce a one-man top.

Texas Oil Sues an Albany Garageman.

The Texas Co. this week filed suit in the Supreme Court for New York county against the Park Garage, of Albany, N. Y. It demands $104.90.

CINCINNATI SHOW DIVIDES DEALERS INTO RIVAL CAMPS

Objecting to Methods of Promoting Association, Dissenters Form Another Organization—Threaten to Stage a Rival Show.

Because, so they claim, non-members are made to pay the expenses of the annual automobile show promoted in Cincinnati by the Cincinnati Automobile Dealers' Association while members get free space, an insurgent movement in the trade in that city has been inaugurated and last week led to the formation of the Cincinnati Automobile Trades' Association; the new organization has a membership of 35, handling about 45 makes of cars and trucks, while the Cincinnati Automobile Dealers' Association has but about 16.

The dealers who flocked about the standard of the belligerents claim that the automobile shows which have been held in Cincinnati in the past have been promoted largely for the benefit of the Dealers' Association, which let its members in gratis and made non-members pay good rates for space; this, it is claimed, caused the non-members to pay all the expenses, while any surplus went into the treasury of the association.

Just what the new association will do remains to be seen, but it is stated by its leaders that unless their demand for reduced space rates is complied with they will hold a show in the Union Central Life Insurance Building, which they consider a much better location than the Music Hall, in which the Dealers' Association has held its shows and plans to hold this year's exhibition, February 21-28.

The new organization has chosen the following officers: President, Raymond Hendrickson, manager of Cincinnati Branch of the Peerless Motor Car Co.; vice-president, T. C. Dennison, of the Winton Motor Car Co.; secretary, Robert C. Crowthers, of the Cincinnati Howard Co., and treasurer, A. S. Pachoud, of the Pachoud Motor Car Co.

Bosch Sues Dealer and not Manufacturer.

Instead of directly suing the Splitdorf Electrical Co., of Newark, N. J., and the Hendee Mfg. Co., of Springfield, Mass., for infringement of the Bosch-Honold patent, No. 974,967, the Bosch Magneto Co. has instituted action against F. A. Baker & Co., of New York, who handle Hendee's Indian motorcycles, with which the alleged infringing magnetos were equipped. The Honold patent is claimed to control magneto ignition as applied to two-cylinder V-shaped motors and, though motorcycle manufacturers are most affected, several cyclecar makers also are involved and may not escape litigation which is threatened.

Searchlight Dealers Appeal Their Case.

Following the entry this week in the United States District Court in Cincinnati of a final decree in the action of the Prest-O-Lite Co. against Coughlin & Davis, the latter filed a bond of $500 to secure costs and took an appeal; the Prest-O-Lite was recently given a decision against Coughlin & Davis, restraining them from selling Prest-O-Lite tanks refilled with Searchlight gas. An accounting also was ordered. The defendant firm consists of Arthur C. Davis and Victor Gluchowsky.

Court Removes Crescent Truck's Receiver.

Dr. D. B. Bundy, who in August last was appointed receiver for the Crescent Motor Truck Co., of Middletown, O., has been removed by the court on petition of several creditors. Bundy was one of the company's stockholders and, therefore, interested, and it is on these grounds that his removal was asked; he had also joined in the petition for a receivership. The week previous the company assigned its property to him.

State Senator Named as Nyberg Trustee.

Frederick Van Nuys, a State senator, has been chosen trustee of the bankrupt Nyberg Automobile Works, of Anderson, Ind., his bond being fixed at $25,000. Van Nuys probably will shortly offer the property for sale. The total number of claims filed amount to $125,000, while the inventory of the provisional trustee showed assets of roughly $115,000.

Maccar Decides to Leave Allentown.

The Maccar Co., of Allentown, Pa., which is one of John M. Mack's projects, shortly will remove to Scranton, Pa. It has acquired a building on Cliff street, in the latter city, which is now being remodeled for its occupancy and in which the manufacture of Maccar trucks will be continued on a larger scale.

Grand Jury Delving into Michigan Failure.

The special grand jury appointed to inquire into the alleged criminal conditions existing in the bankrupt Michigan Buggy Co., of Kalamazoo, began its work last week. A number of witnesses have been examined, but nothing definite has as yet transpired.

American Motorette Becomes Lincoln Car.

The American Motorette Co., of Detroit, which was formed by officials of the Keeton Motor Co., has changed its name to the Lincoln Motor Car Co. Its first car will be styled the Highway model.

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In the RETAIL WORLD

M. S. Bulkley & Co., of Los Angeles, Pacific Coast distributers of the Autocar and the Perfex, have established a branch in San Diego, where the company purchased the Standard Garage, at 821 2nd street, and will make this the headquarters of its business in the extreme southern part of the Bear State. Arthur Dakerman will be manager. The company has other branches in San Francisco, Sacramento, Stockton and Fresno.

The Symonds Motor Car Co., of Los Angeles, has been reorganized under the style C. & S. Auto Co. L. E. Crowe, who has been engaged in the trade on the Pacific Coast for some time, has joined with E. L. Symonds in the enterprise; the company will continue in its old location at 1228-30 South Flower street and, in addition to being Southern California distributer of Marion cars, has secured the Marathon agency.

The Aalding Supply Co. has been formed in Manchester, N. H., by Carl D. Johnston, of 240 Union street; Hugh O'Dowd, John Marston, Oscar Mills and Marshall C. Blanchard. Johnston, who has been in the machine-shop business in Manchester for 18 years, is president, treasurer and manager of the company, which is capitalized at $15,000. The business will be located at 501 Elm street, where the other incorporators have been in business since August.

The MacDonald Garage Co., Inc., which recently incorporated in Schenectady, N. Y., with a capitalization of $10,000, has completed a new two-story garage at 740 State street; it contains 10,000 feet of floor space. The officers are: President and manager, Robert MacDonald; secretary, P. P. Spaulding; treasurer, A. T. Atwood.

The Northwestern Automobile Co., of St. Paul, has secured permission to erect a two-story brick garage, 50 x 60 feet, on Exchange street between 4th and 7th streets; the estimated cost is $12,000. The upper floor will be occupied by the Northwestern Automobile Training School, now located at 199 West 6th street.

The Tiffany Garage, in Poughkeepsie, N. Y., has nearly completed a two-story steel and concrete garage, 174 x 53 feet, with a machine-shop, 75 x 53 feet, in the basement; the building has asbestos shingles and affords 10,000 feet of floor space. The salesrooms, for Hudsons and Hupmobiles, are 20 x 30 feet.

H. A. Wilson and R. G. Adams, formerly of Warren, O., have formed the Niles Auto & Machine Co. in Youngstown, in the same State. They have leased a building on Robbins avenue formerly occupied by the Sykes Metal Lath Roofing Co. and will operate a garage and machine-shop.

Louis Conne, for six years manager of the motor car and accessory department of the Philip Gross Hardware Co., of Milwaukee, has resigned to enter business for himself; January 1 he will open up at 430-32 Jefferson street, Milwaukee, under the style Western Motor Supply Co.

P. F. Betz, who formerly operated a garage in Sioux City, Ia., at 20th and Pierce streets, has reentered the trade in a new building at the same location; his new business will include an automobile livery service.

The Crown City Auto Radiator Works has been established in Pasadena, Cal., by Fred Niederwerfer; he is located at 115 East Union street and makes a specialty of repairing radiators, windshields, horns and other accessories.

The Winnebago County Auto Co. has been formed in Oshkosh, Wis., with $18,000 capitalization; the principal stockholders are George E. Steiner and F. C. and M. Behlendorf. The company will open a garage and salesrooms.

Albert Rentner and David Smith have organized the Rentner-Smith Co. in Milwaukee; they have located at Jackson and Mason streets and will operate a garage and repair-shop. They will specialize in the care of electric starters.

R. W. Prosser and E. R. Seymour have taken over the garage and machine-shop in Minneapolis, located at 1404-6 Hennepin avenue; they will style it the Square Deal Garage. Seymour has had several years' experience in Eastern automobile factories.

Ray Head, who has operated the Overland Garage in Chico, Cal., has sold his business to W. F. Gage and others; the name has been changed to Mission Garage. The new owners will continue Head's agencies in Ford, Overland and Garford cars.

E. S. DeTamble and Carl H. Pine, both well known to the trade in California, have formed the Golden State Motor Car Co. in Los Angeles and have opened salesrooms and a service station at 825-27 South Olive street; they have the Partin-Palmer agency.

R. H. and Ralph Schwetzberger, formerly of Bennett, Ia., have purchased and will operate a garage in Wilton, in the same State; they also will act as Ford sub-dealers under L. H. Dammann, of Bennett.

Following the entry of Leonard J. Field into the company, H. P. Baran & Co., of 1731-37 Broadway, New York City, has become the Field-Baran Co. The company deals in automobile supplies.

E. Campbell, of Audubon, Ia., is about to enter the trade in Manilla, in the same State; he has leased the T. C. Bock Implement building and will open a garage and salesrooms January 15th.

The Flannelly-Clarkson Auto Co., of Louisville, Ky., is equipping a garage and repair-shop at Jackson street and Broadway; the firm members are M. H. Flannelly and E. J. Clarkson.

P. E. Peterson and J. L. Johnson, of Eau Claire, Wis., are erecting a garage at 551 Franklin street; both have been engaged in mechanical work, Peterson for 20 years and Johnson for 12.

Gilbert Ungrodt, a travelling salesman, of Medford, Wis., is about to become a dealer in that town; he has secured the Studebaker agency and will also handle motorcycles and bicycles.

W. K. Partridge and Frank P. Anthony are about to open a garage in Everett, Mass. They will erect a concrete and stone building on Corey street at a cost of $10,000.

A. M. Harger plans to open a garage and salesrooms in Ripon, Wis. He has leased the Bishop building, a three-story structure, and will "open up" about February 1.

H. M. Freeman has "opened up" in Indianapolis at 516 North Capitol avenue; he stocks accessories, featuring Lee tires and the Boston starter for Ford cars.

Henry A. Burger, of St. Joseph, Mo., has purchased the interest of E. T. Rhodus in the Buchanan Auto Co. It is located at 17th street and Frederick avenue.

E. J. Reed is about to inaugurate an automobile passenger service between Pekin and South Pekin, Ill. His initial equipment will be a 16-passenger 'bus.

Charles L. Renz, of Philadelphia, has

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been granted permission to erect a one-story garage and repair-shop; the site is at 7361 Ridge avenue.

S. V. Titus, of Clinton, Ia., is about to enter the garage trade in that town; he has leased a building which is being erected by W. B. Ebensberger.

C. E. Alford and E. Oderkirk, of Aberdeen, S. D., plan to open a garage and salesrooms in Redfield, in the same State; they will handle Fords.

Henry Dean Bourne and John Stone plan to open a garage in Manchester, N. H., on Hanover street; they also will handle Chevrolet cars.

John Esbeck, of Atlantic, Ia., plans to enter the garage trade in Elkhorn, in the same State; a new building is being erected for his use.

John and Menlo Wilson have formed the Wilson Auto Co. in Greenfield, Ia. They have secured the Ford agency for Adair county.

R. H. Knell has formed the King Motor Sales in Detroit and will operate at 603 Woodward avenue; he will handle King cars.

R. S. Harshaw, of Creston, Ia., is about to open a garage and machine-shop; he has leased a building on Montgomery street.

The Harris Hardware Co., of Washington, D. C., has opened a garage on Water street; C. E. Rixford is manager.

R. E. Dodson, of Gilmore City, Ia., has taken over the interest of John Rasmussen in the Ford Garage, in that town.

A. I. Strobel, of Albany, N. Y., has secured plans for a garage; he will build at Ontario street and Myrtle avenue.

Permission has been granted Fred Pueleke, of 9230 Houston avenue, Chicago, to erect a garage; it will cost $7,000.

Girdler, Donnelly & Higgins have opened a garage and repair-shop in Somerset, Ky.; it is styled Main Street Garage.

The Vaught Inspecting & Service Co. has been organized in St. Louis; it will operate a garage and sell automobiles.

The Forest City Auto Co. has been formed in Forest City, Ia. It will stock Buicks and Jacksons.

H. A. Dunlap has erected a new garage in Williamsburg, Ia. He deals in Ford cars and real estate.

Horst & Keppler, of Oakland, Cal., are about to build a new garage; it will cost $10,000.

Hobart Toler, of Loraine, Tex., has opened salesrooms; he has the Maxwell agency.

Henry Neverman has taken over the garage business of H. G. Nicholas in Waverly, Iowa.

WEED'S NEW CONTRACT ON PRICES PUZZLES DEALERS

Company Explains It Is But In Furtherance of Its Bag-Tag "License to Use"—Dealers' Views and What Contract Says.

Coming at a time when price maintenance is a matter of interest, price licensing having been overturned, the Weed Chain Tire Grip Co. has given a new turn to the situation by a subagency contract which was put into effect this month by the Motor Car Equipment Co., the metropolitan distributer of Weed chains.

While some of the subdealers under the Motor Car Equipment profess to be puzzled by the terms of the agreement which they sign when they buy grips, the Weed company states that it is but a furtherance of the company's policy of licensing its chains for use—by the jobber, the dealer and the ultimate consumer. The contract, standing alone, has a consignment flavor, but as the subdealers pay for the chains they get it is stated that to understand the document it is necessary to take into consideration the license tags which are attached to the bags containing the chains. The contract reads:

"1. In consideration of the agency herein granted, the agent agrees not to sell, or offer for sale, either directly or indirectly, the products covered by this contract, except at full net list prices as fixed by the distributor, and the agent further agrees not to offer any merchandise or other inducement with the products covered by this contract to induce their sale, and not to directly or indirectly employ any method which shall in any way violate the spirit and intent of this contract.

"2. The agent will truthfully and honestly account to the distributor for the proceeds of all of the products sold and distributed by it under this contract, less the commission herein specified to be paid to the agent as compensation for his services.

"3. The agent agrees that it shall not be entitled to, nor claim, any commission upon the sale of the products covered by this contract, except as specified by the terms hereof, nor at any time upon products covered by this contract, sold at prices less than the full list price.

"4. The agent agrees that it will not handle, sell or offer for sale, any other chain grips or any other non-skidding devices than those of the Weed Chain Tire Grip Company or the parts thereof resembling them in any way, or marked in any way similar to the product covered by this contract; the agent admits and concedes the validity of the patents of the Weed Chain Tire Grip Company under which the products covered by this contract are manufactured and sold, and will not at any time or under any circumstances contest the validity of said patent.

"5. In case of the violation of this contract by the agent herein, it is understood and agreed that said contract agency and employment immediately terminates and the distributor may retake for the manufacturer from the agent any of the products of the distributor or manufacturer covered by this contract and remaining in the hands of the agent unsold, and the agent by such violation forfeits any right to compensation hereunder, and all the benefits hereby conferred.

"6. The product covered by this contract and consigned to the agent hereunder is understood to be, and remains the property of the manufacturer until finally sold to an ultimate consumer, and the agent has no property right or title therein.

"7. The agreement hereunder may be cancelled on sixty days' notice by either party to the other and the employment of the agent hereunder if not previously terminated, terminates of its own limitation six months from the date hereof.

"8. The records of the distributor as to the amount of product distributed by the agent, shall in all cases be final in fixing the compensation of the agent for his services."

Hatfields Withdraw from Their Company.

C. B. Hatfield and his son, C. B., Jr., have withdrawn from the Hatfield Co., of Elmira, N. Y., which is engaged in the manufacture of commercial vehicles bearing their name. They have leased a machine shop in that city and, although it is rumored that they will manufacture a cyclecar, they decline either to confirm or deny the report.

Minor Business Troubles.

The M. & E. Electric Vehicle Co., of 534 Franklin street, Detroit, has filed a petition in bankruptcy, signed by Charles Pepper, its president; the liabilities are $30,524, and the assets $2,420.

The assets of the Barndt-Johnson Co., a supply house, on South High street, Columbus, O., was sold at a receiver's sale last week for $20,000; it was bought by W. H. English, trustee for a mortgage holder.

Recent Losses by Fire.

Hohokus, N. J.—Joseph F. Tout: garage destroyed. Loss, $2,000.

Johnstown, Pa.—United States Motor Sales Garage; damaged. Loss, $1,500.

Puyallup, Wash.—Herren (or Pierce County) Automobile Co.: garage and 12 cars destroyed. Loss, $20,000.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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LAW THAT COMPLICATES CAR LIGHTING.

Just as it seemed that the more or less time honored side lamps were in a fair way of being replaced for all time by dash-imbedded lamps and extra bulbs placed within the headlights, someone has gone to the trouble of discovering that the ordinance enacted some two months ago by the New York Board of Aldermen almost specifically perpetuated the sidelights.

The ordinance in question requires that "every automobile shall exhibit two lamps showing white lights at a distance of 300 feet in the direction in which the automobile is proceeding, and shall also exhibit a red light visible in a reverse direction. The lamps shall be so placed as to be free from obstruction to light from other parts of said automobile."

Probably the New York aldermen knew nothing and cared nothing concerning the trend of the trade toward the elimination of sidelights, but the language of their ordinance, nevertheless, makes fairly clear that in the present inflamed state of public sentiment and in view of recent "raids," the motorist whose two white lights are not visible from the rear is liable to arrest wherever he may go in the big city after nightfall. The subject, however, is not wholly of local importance, as it bears directly on all car manufacturers who sell or seek to sell cars in New York, which is to say practically every manufacturer of cars in the United States.

Whether the aldermen were within their rights in passing the ordinance is a pretty question, for, while the State law permits New York City to make its own speed regulations, or "any traffic regulation with regard to the operation of motor vehicles," whether the sidelight requirement is properly a "traffic regulation" is a knot which must be unraveled by those whose business it is to unravel such legal knots.

The matter should not be permitted to escape the attention of those automobile associations which exist to promote and defend the interests of those who use and those who deal in automobiles.

WORDS AND DEEDS OF A SECRETARY.

New York motorists are entitled to a smile—a big, broad one reaching to the very corners of their mouths; and there is no reason why the motorists of other States should not share the smile. For the Hon. Mitchell May at last has an opportunity to put someone in jail and he need not go far from his own doorstep to find him.

For almost a year, or ever since he became Secretary of State and took the automobile bureau under his wing, the Hon. Mitchell has been interviewing himself and spreading broadcast his great desire to put motorists in jail; the desire burned so fiercely that more than once it is reported that had he not sat on a cake of ice and thereby avoided self-cremation, it might have been necessary to call out the fire engines; and now simply because a motor car skidded and injured a couple of people his heart's desire could be realized if he so desired. The car that skidded belongs to the State of New York and was driven by a chauffeur paid by the State of New York. When it performed its gyrations, was it on official business bent? Sure! It was en route to a funeral and was occupied by—whom do you guess? No; not by the Hon. Mitchell himself; but by a State chauffeur and some of his friends.

Do the taxpayers furnish cars and chauffeurs for private purposes—even for conveying employes or their friends to funerals? Ask Mr. May! He knows; and he knows his duty, too. If you doubt it, look up some of those interviews he so cheerfully handed out. Seriously, however, Mr. May's predicament serves to emphasize what nearly everyone knows, i. e., that if the law reached out without fear or favor for speed violators and joy riders and misusers of public property, the jails would be so full of public officials and public employes there would be no room for unofficial offenders.

Of course, Mr. May wants it known that the car that skidded was not engaged in a "joy ride" and few persons will be inclined to so charge. For even smiling New Yorkers realize that going to funerals even by proxy is one of the really grave duties of all title holders. It is much better to skid while performing such a duty than to be found in a taxpayers' car at a race track, which, before the May days and when the ponies used to prance, was where most of the taxpayers' cars could be found by any one who desired through necessity or any other motive to find them.

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ATOMOBILES ARE AUCTIONED FROM THE OLD HORSE BLOCK

World's Largest Horse Dealers Inaugurate Weekly Sale of Motor Cars and Trucks — Interesting Results of Their First Efforts.

"And now, ladies and gentlemen, we have a Cadillac—a—a—I don't know when it was built or what model it is, but it's a good little car, as you can see for yourself"—someone tittered. "Cylinders?" The auctioneer looked under the front end. "One's all I can see—it must be a good one. What am I offered? Five! This gentleman bids five dollars! Ten, I hear; fifteen—who'll make it twenty? Twenty, twenty, who'll make it twenty-five, who'll make it twenty-five? Going at twenty, going—and sold! For twenty dollars!"

The Fiss, Doerr & Carroll Horse Co., which is located on East 24th street, New York City, between Third and Lexington avenues, after growing to the point where it ranks as one of the largest, if not the largest, horse dealer in the world, has gone into the automobile business; not as a dealer of any description but as an auctioneer, and at the first auction—last Thursday, 4th inst.—forty-seven cars were sold in the afternoon. The lowest-priced was an old-time Cadillac which the auctioneer couldn't make run. It brought $20, and the highest price paid was $1.050, for a 1910 Lozier.

No pretense is made of acting as a used car dealer; the horsemen take in the cars and sell them on commission—5 per cent for sales of more than $100 and a minimum of $5 for sales less than $100. There is no dickering, consignment or anything else; the cars are taken to the sales arena by their owners and the bidders buy them as they stand and take them away. It is a good chance to pick up a bargain, and it also is probably as good a way as any to get all a car is worth.

"We will accept them Wednesday afternoon," said E. T. Byrne, the company's advertising manager, "and will give the owners until Friday noon to take them away. They can be inspected between the time they are brought in and the time of the sale. Of course, we're horse people and don't know as much as we might about automobiles, but it seems a success.

"The average price was $325." Byrne turned to the record of sales. "Here's a 1906 Packard; it brought $310. A 1910 Selden taxicab brought $130; a 1910 Regal, $650; here's one of these one-horse, truck-like democrat wagon affairs that winds up with a crank like a sewing machine that brought $60. A Pierce-Arrow limousine, marked '4-40,' brought $375.

"Some of the regular used car dealers sent down a lot of junk that they had on their hands and thought it would be a fine time to get rid of it, but I guess they've changed their minds. When the cars didn't bring what they thought they should they bid them in themselves. But even at that it cost the used car men $5 for every car they bid in and we didn't lose anything."

The sales are held in what the company terms its main ring, a tanbark arena, 200 feet long and about 75 feet wide. A balcony surrounds the area, but more of the crowd was down on the floor where it could inspect the cars. The sales are scheduled to be held every Thursday afternoon at 3 o'clock, but the date may be changed, since this is the day of the weekly horse sales, and the two events running at the same time conflict slightly.



* Indicates Sanction by A. A. A.

Dec. 6-13, Toledo, O.—Toledo Automobile Show Co.'s show in the Toledo Factories building.

Dec. 17-20, Davenport, Ia.—Tri-City Auto Trades Association's show in Armory Hall.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan 24-31, Chicago, Ill. — Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 17-24, Detroit, Mich.—Automobile Dealers' Association's show in the Ford Building.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Kalamazoo, Mich.—Kalamazoo Automobile Dealers' Association's fifth annual show in the State Armory.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 4-7, St. Joseph, Mo.—St. Joseph Automobile Show Association's show.

Feb. 9-14, Seattle, Wash.—Annual show in State Armory.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 14-21, Pittsburgh, Pa.—Pittsburgh Automobile Show Association's fourth annual show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 22-March 1, Hartford, Conn.—Automobile Dealers' Association's show in Park Casino.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Association's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

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White's New Salesroom and Service Station in Boston



INTERIOR VIEW OF SALESROOM



STORE AS IT APPEARS AT NIGHT FROM COMMONWEALTH AVENUE

The visitor to Boston's "Automobile Row" may see bigger and more palatial structures in his ramble up and down Commonwealth avenue, but when he has seen them all—especially if at night—he is likely to remember the new salesrooms and service station which has just been opened by The White Co., at 930 Commonwealth avenue. With the interior illuminated by semi-indirect lighting, the ceiling throws down upon the array of cars a light which rivals daytime, and there is not a dark corner in the new and attractive interior.

The extent of the structure, which is largely one big story in height, is indicated by the statement that it affords 40,000 feet of floor space, touches on three streets and the salesroom for new cars will conveniently accommodate 12 cars and 10 trucks at the same time. At the time of the opening of the building to the public floral decorations served to render the salesroom unusually attractive.

The building, which is T-shaped, fronts on Commonwealth avenue and runs back with two entrances on Dummer street and one side entrance on Pleasant street. The entrance on Commonwealth avenue leads into a show room 93 feet 7 inches wide and 81 feet 8 inches deep, with space for 12 passenger cars on the left side and 10 standard trucks on the right side. There is a broad aisle in the center, along which salesmen's desks are placed, and two telephone booths are located at the rear.

Directly back of the show room is the used car department, 60 x 54 feet, in which 20 cars can be placed. To the right of this department and adjoining the show room are the general offices, and still further to the right is a long corridor, 13 feet 6 inches wide, running all the way through to Dummer street.

Directly at the rear of the used car department and the offices are the repair department and machine room, a location which makes it possible to keep the sales and service departments entirely separate. The repair shop is 120 feet wide and 93 feet 4 inches long, and from it a stairway leads to the washrooms of the workmen on the second floor. Another stairway on Dummer street makes it possible for the workmen to leave the building without going into the repair-shop again. The men enter on Dummer street, go upstairs to change their clothes and then go directly into the repair shop by the other stairway, punching their clocks on the way down. All waste of time is thus eliminated. Lighting in the repair-shop is by the overhead, saw-tooth system.

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GUARANTEEING REPAIR WORK

Course of Action by Garageman or Dealer a Problem—Difficult Angles of the Situation—How One Garage man Worked it Out.

How far shall the dealer or garageman guarantee repair work? is a pretty question. It involves many angles, and therefore it is a question that is of peculiar interest to owners of cars. On how the repairman solves it depend much of his profit and much of his business.

A certain motorist took his car into a garage to have the motor and chassis thoroughly overhauled. The garageman was given carte blanche to do whatever was necessary to put the car into perfect condition. The motor was torn down and new connecting rod bearings installed, new piston rings on all four cylinders, new wrist pins; carbon was removed from cylinders, valves ground and other work not enumerated was done. The bill amounted to $45.75, which was paid spot cash.

Knock Developed After Car Left Shop.

The car was used for three days and then one of the cylinders developed a knock that was diagnosed as a result of either a loose piston ring or pin. If the owner continued to drive it he was liable to have a scored cylinder. He considered that it was distinctly up to the garageman to put the motor to rights, as he had contracted to do. The garageman contended that knocks are likely to develop for reasons beyond his control, though he did not say what those reasons were. To do the work over again and tear down the motor without charging the customer meant a loss of practically all his profit on the previous job. Not to do it meant a disgruntled customer and one who had been profitable to him.

In selling the customer he had distinctly stated that all his work was guaranteed. What value is a guarantee that does not mean instant willingness to make good?

This is the sort of question that the garageman is up against quite often. Whichever way he settles it someone is sure to be dissatisfied. But the simple answer is that when work is guaranteed it should be done over again if it was not done properly.

This dealer thought it over because he was conscientious about it. He wanted to be square to himself as well as to the customer. He therefore agreed to do the work again, the customer to pay half the actual cost of the labor. This minimized his loss and satisfied the customer.

Did he do the right thing? If not, what should he have done? Your views will be welcomed.

REFLECTIONS THAT INJURE OR SERVE TO AID THE "HOUSE"

Your employes reflect you. Perhaps they do not do it properly, but nevertheless they do it. The public knows it is your business, and they assume that things are being done the way you want them done. Are they being done the way you would have them done? It means big things for you to know that to a certainty.

When a lazy telephone operator tells an inquiring customer "He's out; I don't know when he'll be back," and in answer to the inquiry "Do you know where I can reach him?" simply hangs up the receiver and cuts off the conversation, it is not the sort of reflection you would desire for yourself. When any discourtesy, of whatever kind, is shown to customers or those who sell your institution, it is a poor reflection of you and your ideals.

The thought can be elaborated on. The significance of it all is that employes can be taught to be real and genuine reflections if your spirit is imparted to them. Nowadays ideals in business are definitely taught; those who would "know to a certainty" do not take chances. They teach and watch and make sure.

To a big garage or dealer this matter of "right reflections" is important because a large volume of business is necessary; every customer counts. To the small garage it is of equal importance because every customer counts double. Think it over; perhaps there is much to be done to have things where they should be.

DEALER GIVES THE PUBLIC UNUSUAL VIEW OF THE CAR

Showing the prospect the "insides" of a car probably never will cease to be a method of attracting interest, and various plans have been evolved by dealers for uncovering for the untechnical man the interior mechanism of the car. The "under side" probably is nearly as interesting as the "insides" since both are concealed from view, and Harry A. Lord, of the Lord Motor Car Co., of Los Angeles, has taken advantage of this curiosity in the prospective car buyer.

A prospect one day was looking over a Maxwell "25" in the Lord salesrooms and, like many another, he became curious as to what the bottom of a car looked like.

"Come back tomorrow and I'll show you," said Lord, who immediately put the idea into effect.

When the prospect returned on the following day Lord had a car turned up on one side. The wheels on one side rested on blocking on the floor and the whole lower side was revealed to the prospect. The car was in full view of passersby, has attracted considerable attention, and as a show window exhibit has served a useful purpose.

Lord states that it apparently has not injured the car at all. Before turning the vehicle over, the gasolene tank, radiator and oil reservoir were emptied to preclude spilling any of these liquids on the floor or over the brightly finished car.

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PUTTING LIFE INTO WINDOWS

Necessity for Change and Originality to Get Value from Space—Ideas that May be Gleaned from Stores of Other Trades.

What are you doing with your window display that is different from what you did last year?—last month?—last week?

Are your windows cleaner and more attractive and therefore better salesmen for you than they were?

Have you tried the effect of special decorations to add interest and focus attention?

One dealer remarks that his show room and display windows, which in this case are one and the same thing, are his bread and butter. He says that if he once gets a man into the show room he can usually interest him.

Automobile Business Not "Different."

What are you doing to get men into your showroom other than the ordinary stunts everyone else is doing?

Just shoo away that idea that the automobile business is different. It is not. The man who tries to persuade himself that it is fundamentally any different from selling any other merchandise is due for a shock.

Of course, you don't go through precisely the same motions as the man who sells furniture. But nevertheless the transactions in the last analysis is exactly the same.

You have sold a man something. He pays for it. That's what constitutes a sale. You have convinced him that your particular product will satisfy him better than something else he has seen or has in mind.

There is illtle, if any, argument on this point in the automobile trade nowadays, but automobile dealers sometimes forget that the merchant dealing in staple lines of merchandise has a history of many years success in the face of just as strenuous competition as we face. He has learned many things of vital importance in interesting people. What can we learn from him? What from the jeweler? What from the furniture man? What from the dry goods merchant? Try and see.

SETTLING COMPLAINTS IN A WAY THAT SATISFIES AND BUILDS

"There are several ways that you can figure it when a man comes in with a complaint. He may be wrong and yet think he is right. Agan, he may be right and think he is right. And lastly, he may be wrong and know he is wrong, but be intent on 'putting it over.'

"Whatever may be the situation," said the president of a large corporation which has a great many customers, "we treat the customer as if he were right. We invite him to the office and discuss the matter as briefly as possible, without argument, and settle it to suit him.

"Analysis and our own complete records show us that the first named class is in the majority. But we settle just as cheerfully and gladly with them as we know how and we consider it the very best kind of advertising. On the other hand we are certain that each month a certain number of small claims are 'put over' on us, but they are paid just as quickly as the rest. It is rarely ever tried a second time. The cost of this quick, agreeable and satisfactory settlement of claims is not anywhere as large as one will naturally imagine. It would surprise most people to learn how low it really is.

"As a result of this plan, with several thousand customers and a large number of employes, we never hear an argument in our office. Voices are never raised, and when a customer goes out he goes out to boost. The great object that we have attained by this method is to have the public with us instead of against us. It lightens work all along the line, makes it easier for collectors, easier for salesmen, easier for the office force. It gives everybody a broad, square feeling that helps business and builds business. It makes for honesty and sincerity; both customers and the house profit by the plan."

SIDE LINES THAT LEFT THE REGULAR BUSINESS IN HOLE

One dealer who wound up the season with seven cars on hand was brought face to face with a condition in his business that resulted in considerable self examination as well as careful study of his books.

The upshot of his meditation and study was that he became plainly aware that he was devoting himself too much to outside matters. A little time taken here and there from the day's work seemed like nothing. But at the end of a season he was able to see that the expense was on him, and amounted to an alarmingly large item.

Very few businesses can run themselves. At no stage of the present is there any chance for a retail automobile business to run itself. Even competent lieutenants seem not enough. Stocks must be kept moving if money is to be made—and that's the only reason for investing.

DEALER HOLDS TRAP SHOOT FOR BENEFIT OF CUSTOMERS

The Overland Motor Co., of Philadelphia, Pa., has taken advantage of the sporting proclivities of its customers as a means of holding their good-will and tending to make them an "Overland family." Many of the Overland owners in the Quaker City are shooters, and this year the company held its second annual trap shoot.

While prizes were offered to be competed for only by Overland owners, the entries were not restricted and a number of gun lovers became acquainted with the Overland dealer through the "shoot fest." This year 91 shooters attended; last year 33. The prizes were silver spoons.

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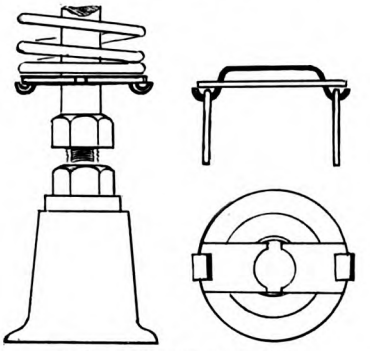
Recent Developments in Accessories

Making Valve Springs Easier of Removal.

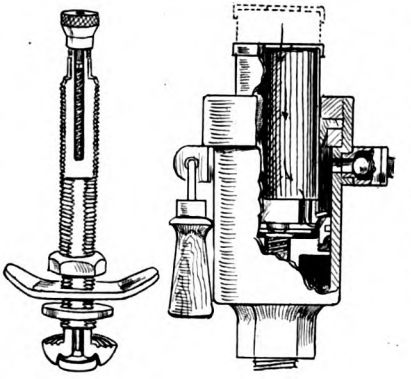
The comparatively heavy springs that are employed to bring down the valves of the modern motor are distinctly "mean"things to handle when they have to be removed and replaced—especially if there is not very much room around the springs for tools. Ergo, anything that will appreciably lessen that "meanness" should be regarded with an approving eye, and as the little device shown in the accompanying illustration and manufactured by the Hoban Valve Retainer Co., of 164 W. May street, Chicago, is designed to mitigate this particular form of worriment, obviously it merits attention.

The appliance is a valve-spring retainer, and is designed to take the place of the usual washer or disk held in place under the spring by a key passing through the valve stem, or whatever equivalent device is fitted. It consists of a disk large enough to support the valve spring, with a hole large enough to slip over the valve stem and, on the under side, a pair of hinged arms swinging from diametrically opposite points on the disk. The free ends of the arms are cut out to hug closely a groove cut in the valve stem when swung inward.

To remove, the spring is raised slightly by pressure on the retainer, when the arms will fall clear and let the spring down; pressure must, of course, be applied in such a way as to let the arms drop. In replacing the retainer the arms are simply held in against the valve stem until they drop into the groove, where they are retained by the pressure of the spring.



HOBAN SPRING RETAINER

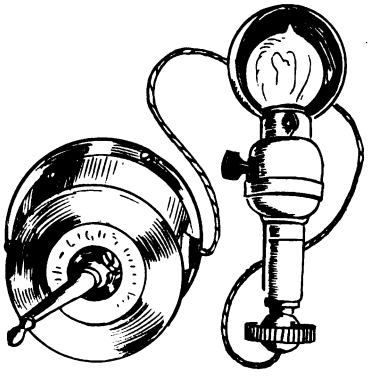


ST. LOUIS VALVE NATIONAL PUMP

"Spark Plug" Tire Pump That's Different.

The small size, handiness and moderate price of the so-called "spark-plug" type of tire pump have made it deservedly popular, and not a few have been designed and marketed. Different from them all, however, is the "telescope" pump that is made by the National Motor Supply Co., of 5606 Euclid avenue, Cleveland, O. The accompanying picture shows the "works."

The pump screws into the spark plug hole, of course, a wood handle facilitating attachment and also helping greatly when the pump is hot, as it is sure to be after use. In the lower part of the cylinder bore is a steel piston with a packing ring, the piston being of the floating type, while attached to the top of the floating piston is a brass tube which moves in and out through the top of the pump cylinder and gives the device its name. The piston is moved by the alternate suction and compression in the motor cylinder, and the air is compressed in the space between the exterior of the brass tube and the pump cylinder walls. The air is taken in through a hole in the head of the brass tube and forced out through the ball valve.



UNIVERSAL REEL LAMP

Tire Valve Designed to Prevent Leakage.

Small as is the valve of a tire, it is a part that is of the utmost importance, for if it fails in its duty of holding the air that has been pumped into the tire it means trouble of several different kinds. Which is one of the reasons why the St. Louis Pneumatic Valve Co., of 4148 Olive street, St. Louis, Mo., has brought out its valve, with the statement that it is about as simple in construction as a valve can be.

The makers claim as the first feature of the valve is its freedom from leakage. Why this should be so is indicated by the fact that there is nothing to it but the outer part, with the usual means for making connections, and inside a long stem carrying on its inner end a shallow brass cap with a soft rubber gasket which, of course, comes between the cap and the valve seat, where it is normally held by the pressure of the air in the tire. The seat is corrugated to improve the air-retaining qualities of the device. A milled nut on the outer end of the stem is screwed up when the tire is inflated, thus drawing the gasket tighter.

Reducing Troubles of Trouble Lamps.

A trouble lamp with a long piece of flexible cable attached to it is not quite as troublesome as an unwound fishing line, maybe; but when it gets adrift and insists upon tying itself into strange knots and ensnaring everything within reach there is about as much similarity as is necessary. At any rate, this seems to have been the way that Cummings Bros., 903 Saginaw street, Flint, Mich., viewed the situation, when they evolved the Universal Reel-light shown in the accompanying illustration.

The reeling arrangement is so elementally simple that it is clear from a glance at the picture. The device has other features however. For instance, when the cable is all reeled up the lamp holder—which contains a key for turning the light on and off—is brought to a socket on the reel case and stands up and throws light on the dashboard, a ball joint in the holder permitting the light to be turned in any direction and a reflector concentrating the rays where they are needed. The reel holds 12 feet of cable and can be attached anywhere.

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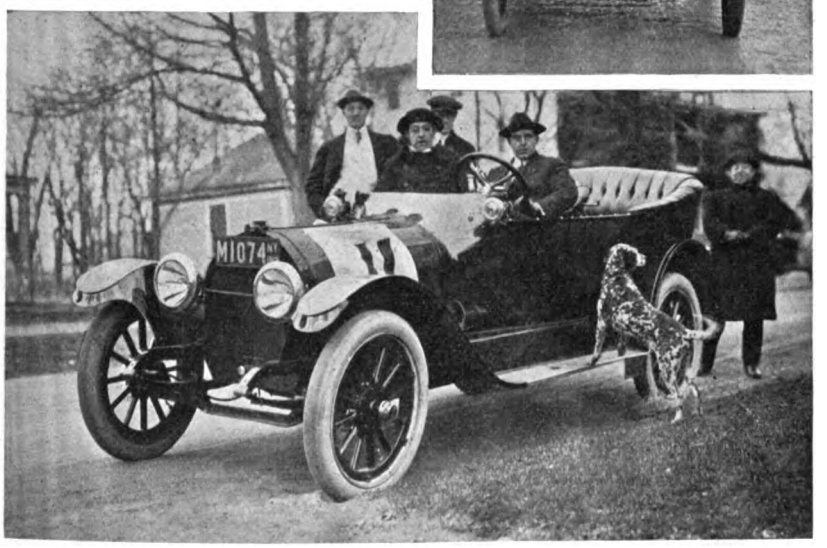
TWO BUICKS PERFECT IN NEW YORK RELIABILITY

Woodruff in a "Four" and Smith in a "Six" Only Ones to Finish 515-Mile Contest Without Penalization—Breitenbach (Chandler) Next with One Demerit—Electrical Equipment Causes Trouble.

Neither three days of very moderately strenuous going, nor rules stricter and a great deal more comprehensive than have been any previous rules for a contest of the kind, could keep all of the cars that were driven in the 500-mile New York Motor Dealers' Contest Association's reliability run which took place Wednesday, Thursday and Friday of last week out of the clean score class, though they came very near to doing so.

Of the 11 drivers who started—and finished—but two escaped penalization, and both of them are Buick pilots, one being E. Woodruff, who held the wheel of a four-cylinder touring car in the smallest piston displacement class, and the other being W.





WOODRUFF (UPPER) AND SMITH (LOWER) IN THE PERFECT SCORE BUICKS

Smith, who steered a six-cylinder touring car in the largest class. Hence, to the Buick Motor Co., which entered both cars, and three others besides, will go the trophy. J. M. Breitenbach finished with the next best score, though there is no second prize, his Chandler "six" going through with but one point charged against it, and that for a leaky water pump. The complete scores of all the contestants, together with the reasons for penalization, are shown by the accompanying tables.

In contrast to the unnatural hurry that marked the first day of the run, when no fewer than four of the drivers were summoned to appear before the minions of the law for infractions of the speed laws, the pace on the succeeding two days was comparatively moderate; probably most of the drivers remembered something of the old saw about being "once bit, twice shy." Be that as it may, there can be little doubt that the slower pace had more than a little to do with the scarcity of road penalizations. Steve Casey (National) was the only one to incur penalty during the last two days, 10 points being charged for a tire blow-out—a penalization which would not have occurred under any other rules.

The run during the first day, as stated in Motor World last week, took the contestants 83.3 miles out on Long Island, from the starting point in front of the Manhattan Automobile Club on 62d street, New York City, to Riverhead, L. I., and return, the total distance being 176.9 miles; the roads, on the whole, were good. The second day proved the longest and the hardest, the ronte taking the cars to New Haven, Conn., and return, the distance being 178.3 miles. It was during this part of the run that the only poor roads were encountered. Practically one-third of the distance was over mediocre dirt roads in Connecticut which previous rains had left rutty and hollowed out in spots. The last day was the easiest, insofar as the distance was concerned, the route leading to Poughkeepsie and return—161.8 miles—and the best considering the weather conditions, the temperature having moderated slightly over night.

The total distance of the run, therefore, was slightly over the originally proposed 500 miles, the figure being 515, to be exact. Inasmuch as the roads covered were such as might be encountered by anyone in the course of a day's riding, the gasolene and oil consumption figures are illuminating. It was to be expected, of course, that the lighter cars would cover the route on less fuel than did the heavier ones. The No. 3 Buick, driven by C. Jones, used less fuel than any of the others, the consumption figuring out at a fraction over 19 miles to the gallon. The eight-cylinder De Dion, on the other hand, burned the most fuel and covered but eight miles to the gallon. The average consumption of all the cars for the 515 miles was 43.9 gallons of fuel, which gives 11.5 miles to the gallon. The average oil consmuption figures out at 342 miles to the gallon. The figures for all the cars are as follows:

No.	Car and tires.	Gals. Fuel.	Qts. Oil.
	TOURING CARS—UNDER 230 INCHES.		
1	Buick, Goodyear	32½	6
2	Buick, Goodyear	30½	2
	RUNABOUTS—UNDER 230 INCHES.		
3	Buick, Goodyear	27	3½
4	Buick, Goodyear	31½	10½
	TOURING CARS—231-300 INCHES.		
5	Chandler, S & K	37	4
6	Oakland, Goodyear	56½	8
	TOURING CARS—OVER 301 INCHES.		
7	Oldsmobile, Fisk	56½	6
8	De Dion, Knight	63¾	..
9	National*	46½	8
10	Hudson, Fisk	54	4½
11	Buick, Goodyear	47½	12½

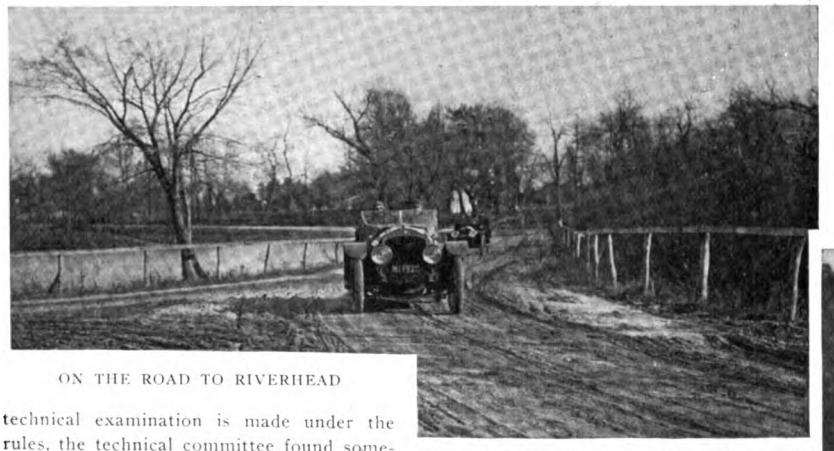
*Firestone, Fisk and Diamond.

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DETAILED SCORES OF THE 11 CONTENDERS IN THE NEW YORK RELIABILITY CONTEST

No.	Car	Entrant	Driver	Road	Motor	Dist. Brakes		Points	Clutch	Gearset	Tech-nical	Elec-tric	Speed-ometer	Total
						Hand	Foot							
1	Buick	Buick Motor Co	E. Woodruff	0	0	37	38	0	0	0	0	0	None	0
11	Buick	Buick Motor Co	W. Smith	0	0	34	29	0	0	0	0	0	0	0
5	Chandler	Brady-Murray Motor Corp.	J. M. Breitenbach	0	0	28	35	0	0	0	1	0	0	1
2	Buick	Buick Motor Co	A. A. Guilford	0	0	33 5	30	0	0	0	4	1	None	5
10	Hudson	A. Elliott Rainey	A. W. Harman	6	0	44 5	46	0	0	0	0	0	0	6
6	Oakland	Sydney Bowman	H. A. Neeley	1	0	28	37	0	0	0	3	10	0	14
8	De Dion	Emanuel Lescaris	E. Cordier	9	5	41.5	32 5	0	0	0	1	5	0	20
9	National	Poertner Motor Car Co	Steve Casey	10	0	58	30	8	0	0	0	3	0	21
3	Buick	Buick Motor Co	C. Jones	0	0	29.5	26 5	0	0	0	0	30	None	30
4	Buick	Buick Motor Co	J. D. Coote	0	0	23.5	24	0	0	0	0	45	None	45
7	Oldsmobile	Oldsmobile Co., N. Y.	T. Speer	0	0	45	121.0	570	0	0	0	10	0	580

As was to be expected, and as usually is the case in reliability contests where a final technical examination is made under the rules, the technical committee found something or other wrong with five of the seven cars that finished the three-day run without road penalization. T. Spear's Oldsmobile drew the heaviest penalty of the lot, 570 points being added to its score for a defective foot brake. The brake tests were held on Saturday morning last on Dyckman street, just at the foot of the Fort George hill, the contest committee being in charge. In the tests, each car was paced by the pacemaking car at its contest speed, the foot brake being set as the car crossed a line and the distance required to bring the car to a stop measured; the emergency brake was separately tested in the same way; the penalties were one point for each foot or fraction over 50 feet required to stop the car; five points for each foot or fraction between 60 and 70 feet, and 10 points for each foot or fraction over 70 feet.



ON THE ROAD TO RIVERHEAD



FOUR-FIFTHS OF THE BUICK ENTRY NEAR PEEKSKILL ON LAST DAY

Spear's Oldsmobile slid 121 feet with the foot brake set, though the car stopped in 45 feet under the emergency brake. Casey's National was the only other car that drew brake penalization, the prescribed 50 feet being exceeded by eight, with the emergency brake set. The foot brake brought the car to a stop within the required distance, however.

By far the most important difference between the rules under which the contest was run and the regulation reliability rules of the American Automobile Association, as was made plain in Motor World last week, is that whereas no attention is paid to

TROUBLES THAT WERE RESPONSIBLE FOR THE PENALTIES METED OUT

Car 2:

Lost fan belt	2
Tail light bracket loose	2
Faulty electric connection	1
Total	5

Car 3:

Burned out bulb	5
Defective ignition	25
Total	30

Car 4:

Two bulbs burned out	10
Ignition on battery side defective	10
Starter inoperative	25
Total	45

Car 5:

Leaky water pump	1

Car 6:

Adjusted brake	1
Leaky tank	1
Headlight tie rod two nuts loose	2
Battery ignition defective	10
Total	14

Car 7:

Foot brake test	570
Battery ignition defective	10
Total	580

Car 8:

Dirt in gas line work	9
Cylinder missing	5
Leaky water pump	1
One bulb burned out	5
Total	20

Car 9:

Blowout	10
Hand brake	8
Dash lamp faulty	3
Total	21

Car 10:

Replace tail lamp and work	6

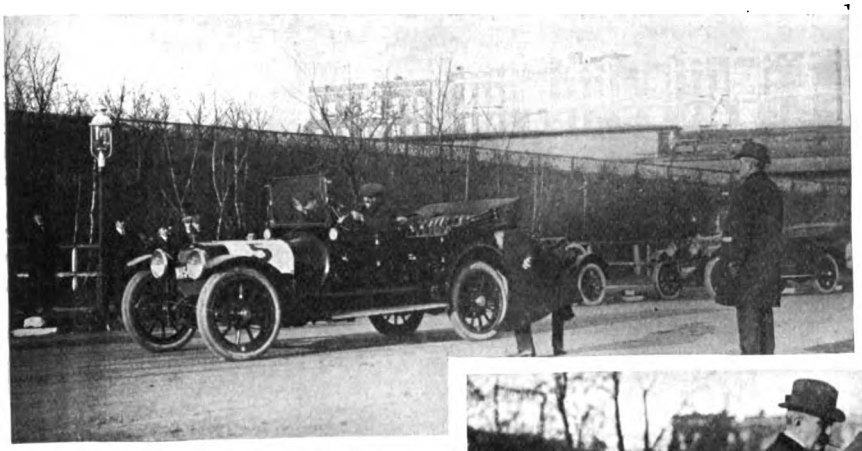
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equipment in the A. A. A. rules, the new rules adopted by the M. D. C. A. contest cover everything in the equipment of a car except the clock—engine starters, tops, windshields, speedometers, tire and luggage carriers, foot and robe rails, upholstery, lamps, horn, bumpers and bodies included.

In the outdoor operative tests which were the ignition switch in one position, penalties were charged for the defect, though they would not have been charged under other rules. In one car—Coote's Buick—the starter failed to operate properly in the final test, for which 25 points were charged.

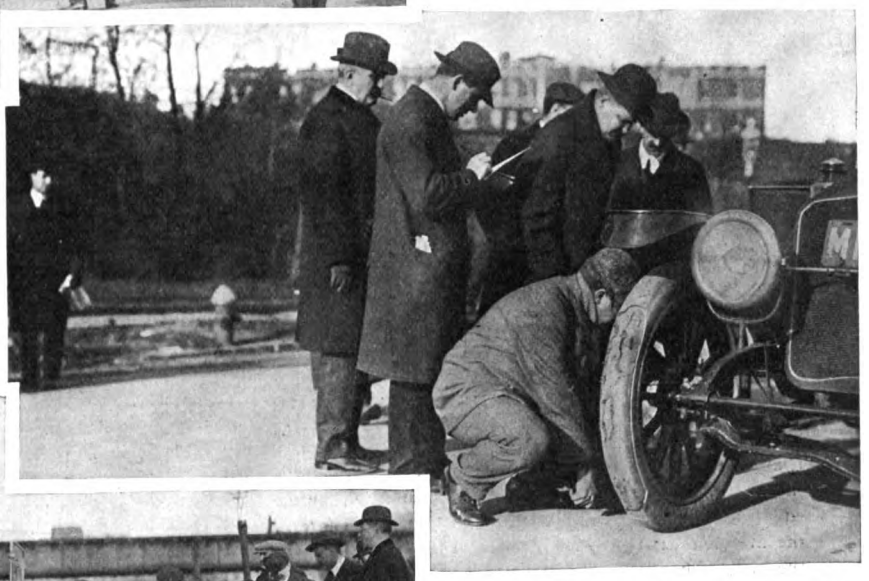
The particular component of the electrtic equipment that caused the most demerits ing on this account. In addition, Casey's National was debited three points for a faulty dash lamp and Guilford's Buick two points for a loose tail lamp bracket, all of them being new penalties under the new rules. Tops and windshields and speedometers and other items of regular equipment cost no one any demerits. With the exception of the De Dion and the National, which had no starters, all the cars were fitted with Delco electric lighting and engine starting systems.

Another feature for which the three day's run was quite out of the ordinary was the lack of tire trouble experienced by the contestants. Casey's National was the only one to suffer a blow-out—the car was traveling nearer to 40 than to 30 miles an hour at the time, and one of the wheels struck a rock the size of a derby hat—and there were only two punctures reported. Punctures cost the driver nothing, but blow-outs were

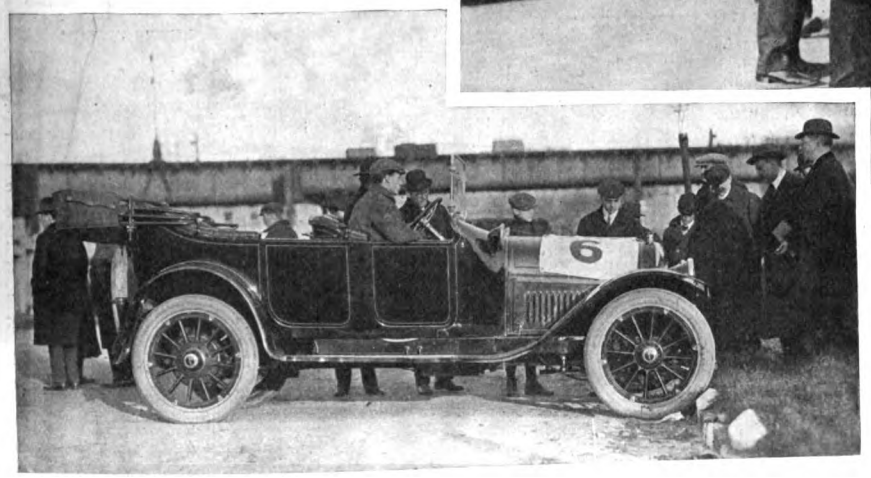


TESTING THE CHANDLER'S BRAKES

completed the day following the finish of the run, none of the cars was penalized for faulty clutches or defective gearsets. Which is to say that when each car had its front wheels placed against a six-inch curb, with the low gear engaged, the car either climbed the curb, the wheels slipped around or the motor was stalled. In the gearset



NATIONAL UNDERGOING INSPECTION



NEELY'S OAKLAND UNDERGOING THE OFFICIAL CLUTCH TEST

test each car was required to run on each of its gears. When it came to testing engines, however, a number of discrepancies were found, most of them being due to faulty electrical apparatus. Thus, for instance, four of the cars, as shown by the accompanying table, exhibited defective battery ignition, and though engines nevertheless would run and run well with was faulty lamps. Few entrants were thoughtful enough to replace bulbs that already had been in use for a considerable period with new ones for the run, and as the lamps were required to be kept lighted a specified number of hours each day, a number of bulbs already well used were unequal to the strain and flickered out. A burned-out bulb cost five points, four scores suffering against the offending machine at the rate of 10 points per blow-out.

Must Pay Damages for Bump in Road.

Because a bump in the road at a railroad crossing caused an injury to Mrs. Julius Hayman, of New York City, the Long Island Railroad Co. and the City of New York, jointly, must pay her $15,000; after four years the suit was this week decided in her favor by the Supreme Court in Brooklyn.

Mrs. Hayman was riding in a car June 24, 1909, when the car struck a depression in the road at Avenue U, caused by a change which was being made in the level of the railroad company's tracks. She was thrown to the floor of the tonneau; injury of the knee left her lame.

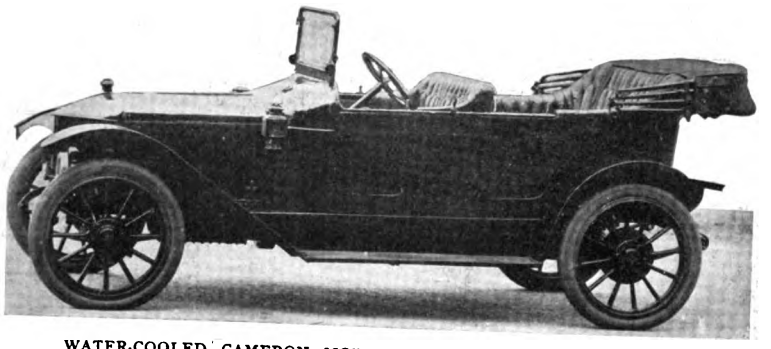
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WATER COOLING ADOPTED FOR ALL CAMERON CARS

New Overhead Valve Block Motor Takes Place of Separately Cast Air-Cooled Cylinders—Electrical Equipment Added.

Having completed the preparation of its new factory in West Haven, Conn., the Cameron Mfg. Co., which was the Cameron Car Co., of Beverly, Mass., but which a year ago last September underwent reorganization and was rechristened, has recommenced manufacturing operations, and its first product, which now is practically ready for the market, reveals radical departure from previous practice.

Heretofore, the Cameron car has been distinguished by its separately cast air-cooled cylinders, but in its newer form it has a block motor cooled by water. This change, which manifestly has necessitated the addition of a radiator—a sharply pointed V-type has been adopted—constitutes the principal change that has been made in the single chassis.



WATER-COOLED CAMERON MODEL SHOWING POINTED RADIATOR

Quite as a matter of course, the Cameron patented transverse rear axle transmission system that has served to such good purpose in years gone by, has been retained with only minor alterations and improvements. The system, in fact, now serves as the chief distinguishing mark of the car, which has been brought thoroughly up to date in every respect, a feature which is made plain by the adoption of a complete electric lighting and engine starting system.

The transmission system is different from anything else of its kind, as is made plain by the accompanying picture, the principal advantage claimed for the construction by the makers being that it permits direct drive ahead on any of the four speeds and direct drive in reverse. It is pointed out that the arrangement of the gearing permits the transmission of the maximum amount of power with the minimum loss through friction and gear efficiency. Quietness in operation also is obtained as an equally important result of the somewhat radical construction.

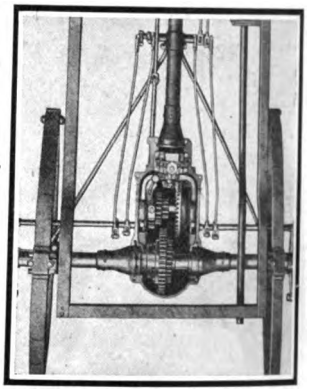
In changing over from air cooling to water cooling, the Cameron company has not been content with any half-way measures and has developed a type of motor that has a number of noteworthy features, not the least important of which is that it is of the long-stroke high-speed type. As already has been made plain, its four cylinders form a rigid block supported at three points. Bore and stroke measure 3⅝ and 5 inches, respectively, the piston displacement therefore being 206.4 cubic inches and the horsepower rating according to the A. L. A. M. formula, 21.8.

By way of ensuring the generation of the maximum power, the valves have been located directly in the center of the combustion chamber, which is so shaped that the greatest force of the explosion comes over the center of the pistons. The valves are operated by enclosed rocker arms all arranged on the same side, along with the breaker end of the magneto, which is driven from a transverse shaft at the front, the carburetter and the openings to the water jacket and crankcase, a design feature which makes necessary the raising of only one side of the hood for all ordinary adjustments. The crankshaft is supported in three liberal bearings and great care has been taken to ensure quiet operation of the valve mechanism.

From the engine, power is transmitted through the intermediary of a large diameter, self-adjusting inverted cone clutch and a shaft enclosed in a substantial torque tube to which are hung the brake equalizers, to the rear axle transmission system. The rear axle itself is of the full-floating type and the front axle is of the distinctive Cameron tubular type. At front the chassis is supported on the regulation semi-elliptic spring members, the rear springs being full elliptic with scroll ends. Both sets of brakes are of the internal expanding type and operate in large rear wheel drums. The wheelbase is 115 inches and the wheels may be either wood or wire, with demountable and flush hubs and fitted with 32 x 3½-inch tires; provision is made for equipment with 33 x 4-inch tires, though their specification adds to the price of the car.

The lines of the touring body are modern in their tendency toward the elimination of curves; the gasolene tank, which holds 18 gallons of fuel, is stowed in the deep skuttle dash. Cushions are deep and are upholstered in hand-buffed leather. In conformity to what now has become standard practice, the steering wheel is located at the left side with the control levers in the center.

In addition to the standard five-passenger touring model, four other types of bodies also are mounted on the same chassis; they include a four-passenger touring model; a roadster, a special "featherweight" roadster which weighs but 1,975 pounds; a two-passenger coupe and a three-passenger sedan model. In each case, the equipment is the same and includes mohair top with boot and side curtains, windshield, speedometer, tool and tire repair kit; electric lighting and engine starting system; pump and jack. Deliveries will be commenced after January 15th.



DIRECT DRIVE REAR SYSTEM

Storage Batteries Not Easily Frozen.

It may allay the fears of owners of electrically-lighted automobiles that are kept in cold places and of battery-driven machines to know that the electrolyte in the cells is a good anti-freezing mixture and will stand a very low temperature before beginning to thicken up and get "slushy." It may be said that the same mixture in a radiator would eat away the metal in no time, so that it would be of no use in a cooling system. In the battery, however, it is safe, and there need be no fear of its freezing in any ordinary variety of winter weather.

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SALESMAN WHO "KNOWS EVERYTHING" NOT BEST

Reilly's Protege Tells the Number of Teeth in a Gear He Never Heard of —Why an Admission of Ignorance Indicates Wisdom—Reilly Says Know-it-all is Not Likely to Learn Any More.

Tommy Trumbull was tickled to death—most. He had sold a car!

Scores of cars are sold every business ay in the year, so, in order to understand hy Tommy was barely able to smother all itward manifestations of his inward bubling, it may be necessary to explain that was the first car he had ever sold.

The mere fact that a sale meant something financially to him was not nearly so important as that he now would be able to vercome that hesitant I-hardly-believe-it-yself tone when he told his friends he was n automobile salesman. He tried hard not bubble.



"NEW SHOES! NEW SHOES! I JUST BOUGHT THESE!" EXCLAIMED TOMMY

"Oh, laugh right out loud, if you want o!" he exclaimed as he detected a subdued ort of smile on the faces of both Reilly nd Nellie, the chauffeur of the office typeyriter.

Tommy Has a Retrospective Flash.

"I suppose you can buy some winter hoes now," and Reilly glanced at the low, ummertime models that Tommy wore.

"New shoes! New shoes! I just bought hese!"

"You did?"

"Oh, I know what you mean, all right," eplied Tommy, "but low shoes are better or winter than high shoes. They——"

"Did you ever wear a pair all winter?"

"No, but——"

"Did any medical or shoe authority ever ecommend them?"

"No, but——"

"But what?"

"Lots of fellows wear them!"

"How many teeth are there in our differential master gear?"

Tommy's face reddened. As a life history is condensed into seconds in the mind of a drowning man, Tommy again saw himself out on the salesroom floor, leading his first buyer through a story of the good qualities of the car. He again heard the buyer ask that unexpected and darned-fool question, and he again heard himself answer promptly "Fifty-three."

One Man Can't Know Everything.

But when Reilly asked the question Tommy stammered, "I—I—I don't know."

"Neither do I," replied Reilly, "so on that point you're almost as good a salesman as I am——"

"Why—why—what——"

"And the reason I am a better salesman than you are right there is that instead of making a guess and saying 'fifty-three' I would have told the man I didn't know."

"But he asked me!"

"I know he did, but that's no reason you are supposed to know, is it? If the mere fact that someone asks you something makes it possible and necessary for you to know it, you have knocked the props from under all the schools, colleges and salesmanship courses in the world."

Tommy saw it coming, he knew he had it coming, he knew he couldn't stop it coming, so—due credit to Tommy—he kept still and let it come.

"It's poor policy, trying to be an Ever Ready Know-it-all Information Bureau; it can't be done. No one ever knew everything, although I believe it is claimed there are one or two exceptions. I know why you told the man there were fifty-three teeth in that gear, and perhaps you are not to be blamed too much, seeing that you haven't been selling things so very long. If I am not mistaken, you thought that admitting you didn't know something the man wanted to know was going to let you down in his estimation and render the sale less likely. Am I right?"

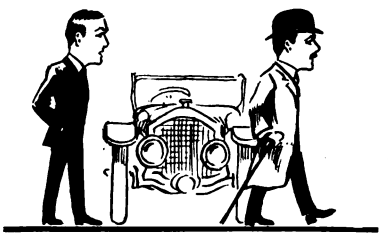
Get Information Before Giving it.

"Quite right," Tommy said—and no more.

"But you were wrong there, my boy. The man who doesn't know too much gets along better than the man who knows it all. There is a great deal of harm done by salesmen who try to know everything and who think they are weakening their case by admitting there is something they do not know. Right at the start, however, I want to impress upon you that you can't know too much about the car. Some salesmen believe they are better because they do not know too much of the technical side of the case, but I don't agree with them; but, at that, I'll wager the man who designed the car can't tell how many teeth there are in that gear. I can't conceive what led the man to ask that fool question."

"What should I have done."

"You should have told the man you didn't know, but that if he would wait a couple of seconds you would find out; you could have counted them from a catalog picture, perhaps, or could certainly have found out



"THE PROSPECT LEFT SHORTLY AFTERWARD WITHOUT BUYING A CAR"

by going to the repair shop. It isn't well to leave a prospect if you can avoid it, but the chances are he didn't care enough about knowing to let you go to the trouble of finding out. What I want to ask you is, what do you suppose the man will think of you if he ever counts those teeth himself?"

Knew Too Much and Lost His Sale.

"Well," was the resigned reply, "he'll probably think I'm an awful liar or don't know much about the car."

"Take your choice; one's as good as the other." Reilly turned in his chair and looked straight at Tommy. "You made your sale," and Reilly gesticulated with a finger, "but I know a man who lost a sale by 'knowing' something he didn't know."

"Is that so?"

"It is. The prospect in that case had had one car and it hadn't been satisfactory. It had a splash oiling system and it gave him so much trouble he vowed he never would have another car with a splash system. He went to a certain dealer here in town because he had heard tney had a different and a good oiling system. He looked the car

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over and was well impressed with it. Then he asked about certain mechanical features, and when he touched on lubrication the salesman promptly answered, 'It's a splash.'

"'Splash?' said the prospect. 'I thought you did away with that.' 'Oh, no,' replied the salesman, 'we didn't do away with it; we improved it.' The prospect left shortly afterward without buying a car. The salesman didn't know the reason he lost the sale and doesn't know yet, but the prospect went out and bought a car which had a force-feed system. As a matter of fact, the car he didn't buy had almost the same identical system."

"That's a pretty big point to go wrong on, isn't it?" asked Tommy.

Should Know the Technical Side.

"It certainly is. Had I been that salesman I would have been tempted to make a guess at it rather than admit I was ignorant on so important a point, but the point is that he should not have been ignorant. He should have known enough of the technical side of the car to be able to answer questions intelligently. But such things as that man asked you aren't expected of anyone but an engineer, and the engineer who built the gear, at that."

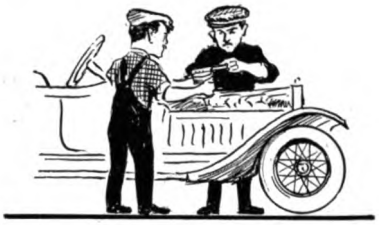
"I thought he was getting in pretty deep," commented Tommy, who was becoming convinced that there was a more or less bright side to the situation.

"It isn't treating the prospect right," continued Reilly. "If he asks a question it is safe to assume that he has a reason for wanting to know that particular thing, and it isn't right to give him false information. A friend of mine had decided that when he bought his second car he would try out a brand of carburetter which he thought was pretty good. He asked the salesman of whom he was buying the car if this particular carburetter would fit. The salesman, anxious to make the sale, said 'Yes, yes; certainly,' and the man bought the car. Several weeks later he found himself in a predicament when he tried to make that carburetter fit. When he went back at the salesman about it the salesman apologized profusely and said he undoubtedly had made a mistake. That made the car owner sore, all of which was uncalled for.

False Information Caused Trouble.

"Another car owner dropped in at the salesroom where he bought his car and asked if the pistons were the same as the year before. 'Just the same, just the same,' said the salesman. Whereupon the owner took his car to the garage and told them to put in a new piston, they having told him one of them apparently was cracked. But when they came to put in an old piston from stock it wouldn't fit, and the owner was held up while they monkeyed around getting one of the new ones.

"Hang it, Tommy!" Reilly exclaimed, "it isn't fair to yourself. A man who knows it all isn't in a position to learn any more, and stands still or goes backward rather than forward. If a salesman is of the type who answers any question whether he knows it or not, he never is going to learn



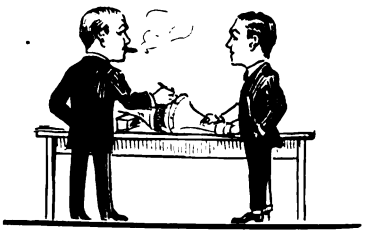
"WHEN THEY CAME TO PUT IN THE PISTON IT WOULDN'T FIT"

the right answer to the questions to which he doesn't know the answer. He gets to be a surface skimmer and doesn't get a hold on the roots of the business.

Too Much Information Confusing.

"Take yourself in this particular instance. Of course, knowing how many teeth there are in all the different gears in a car isn't at all necessary, and trotting out that information in selling a car to the average man would serve only to mix him up; but, assuming that knowing this is essential, you have guessed at it, and, having guessed at it and disposed of the question for the one occasion, it passes from your mind and you pay no further attention to it until it comes up again. Then you make the same old guess, or a different one.

"Now, had you told the man you didn't know and volunteered to find out, and had you actually ascertained the correct number, the probability is that you would al-



REILLY LOOKED QUIZZICALLY AT TOMMY. "FIFTY-THREE," HE SAID

ways remember it; anyway, the chances are there would be more likelihood of your remembering it. It would be good discipline, too, for yourself; it's like reading with a dictitonary at your elbow. Whenever you sit down to read anything at all you are almost sure to run across a word the meaning of which is not exactly clear to you; the average man makes a guess by hitching the word up with the context.

"But if you want a tip that will prove interesting and which will help increase your vocabulary, just plant a little dictionary alongside yourself when you sit down to read and whenever you run across a word that isn't clear, look it up. You'll be surprised at what you don't know; also, you'll be surprised how much you'll learn. As for that salesman who didn't know what kind of oiling system his car had, he never should have undertaken to sell a car without knowing so essential a fact. That was pure shiftlessness. He's the kind of man who would dust up a room and sweep the dirt under the rug."

Tommy Was Right—but Accidentally.

"What do you suppose that man wanted to know about those teeth for, anyway?" asked Tommy.

"Maybe he had counted them up himself and wanted to see if you knew," replied Reilly, "and just to satisfy my curiosity I'm going to find out myself. Come on."

In the repair-shop Reilly flicked at the teeth of a big gear with his pencil and counted. Then he said "Huh!" and counted them again.

"How many?" asked Tommy.

Reilly looked quizzically at Tommy and shook his head in mystification.

"Fifty-three," he said.

To Prevent Frosting of Show Windows.

Cold weather brings with it certain troubles for the man who has a show window, and the finer and bigger the window the more aggravating the troubles are likely to be. Which is as much as to say that a big sheet of plate glass covered with frost or with moisture from "sweating" is about as good as no window at all. It isn't a window at all, in fact, but a first-class screen. Of course the real, rock-bottom way to keep windows from "sweating" and frosting is to provide such ventilation and circulation of air that there will not be an excessive difference between the temperature of the glass and that of the air in contact with it. In the absence of such ventilation, however, there are other things that can be done and that will help out to some extent, at least.

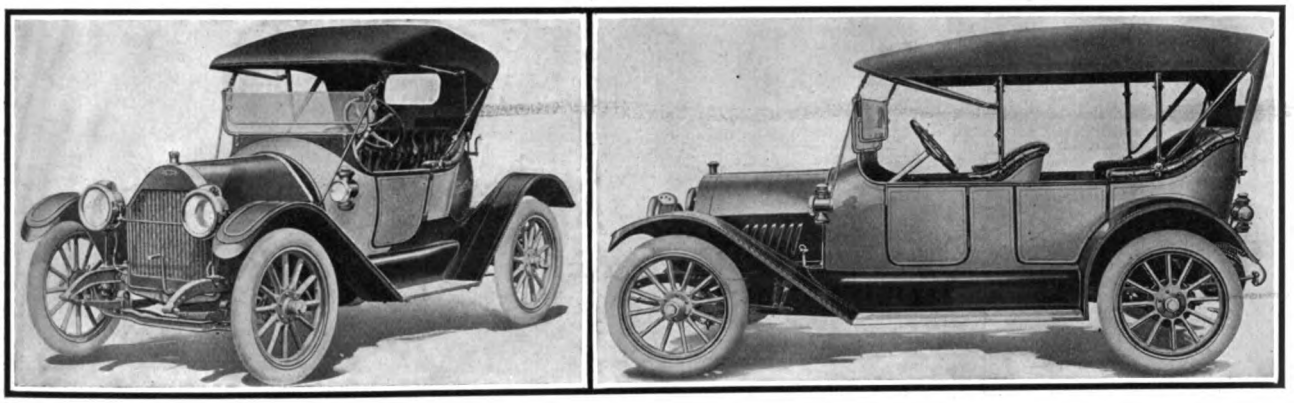
For instance, an electric fan, or several of them, can be put in the window and made to deliver air directly on the glass. This is by no means an uncommon expedient, and usually has the desired effect. And a still simpler way is to rub the glass with a solution of equal parts of alcohol and glycerine and let the stuff stay on. Incidentally, the same scheme is a good one to prevent the accumulation of moisture on windshields.

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CHEVROLET "FOUR" CHASSIS MOUNTS TWO TYPES OF BODY

Considerably Bigger than Its "Little" Predecessor—Overhead Valve Gear Completely Enclosed and Cylinder Heads Removable.

Whether or not there is any connection between the size of a car and the length of its name, it is a fact that the Chevrolet "four" is a considerably bigger car, any way it is viewed, than the Little, the place of which it takes. The engine is bigger, the wheelbase is bigger, the body is bigger—in short, it is bigger in every detail, not even excepting the price. The Chevrolet Motor Co., of Flint, Mich., which took over the Little company, has brought out an entirely new car that is reminiscent of the prototype only in certain indefinable attractiveness in appearance—a combined sturdiness and gracefulness, if such a term can fittingly be applied to a car, that is by no means as easily incorporated in a design as most people probably imagine is the case.

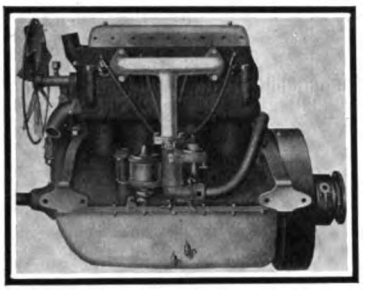


CHEVROLET ROADSTER SELLING FOR $750

TOURING MODEL WHICH IS LISTED AT $875

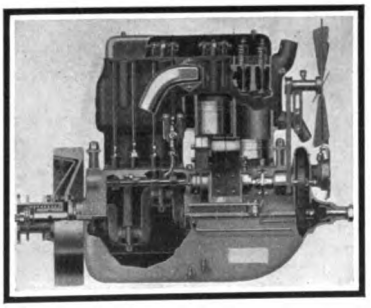
To bring out the extent of the differences between the old and the new cars, it may be said that the Chevrolet has a wheelbase of 104 inches as against 90 inches for the Little, while the motor has a bore and stroke of 3 11/16 inches and 4 inches, respectively, as against 3½ and 3⅜ inches bore and stroke of its predecessor. Moreover, while the Little was supplied as a runabout only, the Chevrolet "four" may be had with either runabout or touring bodies, the prices being $750 and $875, respectively. The chassis is the same in both cases, the only difference being that with the runabout body the tires are 30 x 3½ while with the touring body they are 32 x 3½. The tires are straight side Q. D. clinchers.

The Chevrolet motor is of the valve-in-the- head type and the cylinders are cast in a single block with the usual accompaniment of three-bearing crankshaft. The valve mechanism—that is, the overhead part—is enclosed by a detachable cover which



INTAKE SIDE OF MOTOR

makes an exceedingly neat finish and keeps the dirt out and the slight valve noises in and can be removed by taking out two bolts. A feature that is very convenient in a motor with valves in the head is that the heads are removable, the combination giving a most accessible motor, for of course the valves are readily gotten at, while the pistons and connecting rods can be removed through the tops of the cylinders. The cleanness of the motor is not a little enhanced by the fact that the exhaust manifold is cast integral with the head casting; the intake manifold, which is bolted to the head casting, is a simple affair with but two branches. The valves are 1½ inches in diameter, affording ample area for the passage of gases.



PART SECTION SHOWING VALVES

The crankpins all are 1½ inches in diameter and the bearing surfaces 2⅛ inches long. In the main bearings of the crankshaft the practice is followed of making the bearings of greater diameter at the rear than at the front. The front bearing is of the same diameter as the crankpins—1½ inches—while the middle bearing is 1 31/32 inches in diameter and the rear bearing a full 2 inches; the bearing lengths are 2¾, 2 and 3½ inches long, the longest bearing, of course, being at the flywheel end.

The motor is lubricated by splash, the oil being circulated by a positive pump and passed through a sight-glass on the dash, so that the driver can see how the system is working at all times. The carburetter is of the double jet type and ignition current is generated by a high-tension magneto. Gravity is relied upon to circulate the cooling water, the usual fan back of the radiator ensuring a draught of air.

The clutch is a leather-faced cone, with compensating springs to give easy engagement, and the gearset provides three forward speeds, selectively controlled by a centrally-located lever; the steering wheel is on the left side. The gearset is mounted separately from the motor. Semi-floating construction is embodied in the rear axle. Both sets of brakes are on rear wheel drums, the service brakes being external contracting and the emergency brakes internal expanding. The front wheels run on ball bearings.

The bodies are extremely clean and neat in design, the absence of external encumbrances being particularly noticeable. Door handles and hinges are on the inside. The dashboards are surmounted by cowls of moderate depth with a slope that harmonizes well with the body lines. In the front semi-elliptic springs are fitted, while in the rear the springs are three-quarter elliptics.

In the runabout the gasolene tank is of

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oval cross-section with a capacity of 20 gallons and is placed behind the seat on the rear deck. The touring car has a 16-gallon tank hung under the body at the rear. The weights of the two types are 1,975 pounds for the runabout and 2,200 pounds for the touring car, in both cases full equipment, oil, gasolene and water being included in the weights.

Both models are sold with an equipment list that includes mohair top with cover and side curtains, windshield, five lamps, Prest-O-Lite tank, horn, speedometer, tools, jack, pump and tire outfit. For an additional consideration of $125 either model will be equipped with electric lighting and starting system, in which case the magneto will be omitted and a coil and distrtibuter used for the ignition.

Why Spark Advance Causes Knock.

Notwithstanding the glibness with which the knocking of a motor with an excessive spark advance is referred to, there are many who would be sadly at a loss to explain why such knocking occurs. The fact of the matter is that when a motor is running at high speed and ignition occurs just before the piston reaches the top of its stroke, the pressure of the explosion does not reach maximum until the piston has started on its downward stroke and is running away from the blow, so to speak, lessening the impact much as the impact of a baseball is lessened by drawing back the hands just as the ball strikes. If the speed of the motor is decreased, however, without retarding the time of ignition, the explosion occurs either as the piston is still rising or while it is at the dead center, so that there is a sharp rap without any piston movement to ease its impact.

North East Ford Unit Direct Connected.

In the description of the North East Electric Co.'s latest adaption of its electric lighting and engine starting system for application to Ford cars, which appeared in the issue of Motor World bearing date of November 27th, the basis of the equipment is the new "gearless" unit just developed; it is direct connected to the crankshaft of the engine through chain and sprockets and does not, as inadvertently was stated, incorporate the automatically shifted gears that form one of the distinguishing features of other forms of the North East company's lighting and starting apparatus.

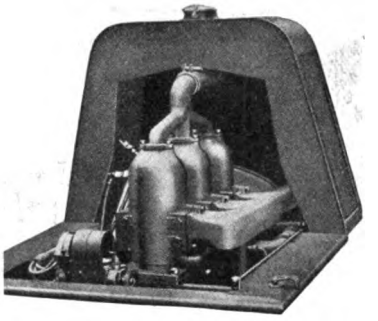
Good Lifting Jacks and Bad Ones.

It is an unfortunate thing that there are in existence so many automobile jacks that are miserable, trappy affairs, when really good jacks are comparatively inexpensive. Besides being a nuisance, a poor jack is a menace to the car and to the operator.

PALMER-MOORE TRUCK MOTOR COOLED BY AIR OR WATER

But no Other Changes Made in Three-Cylinder Two-Cycle Engine — Speed Regulation by Rotary Shutters in Gas Ports.

When it comes to a question of cooling systems, there are persons who like air-cooled motors and there are others who don't and who refuse to consider an engine, however good it may be, if it is not water-cooled. And as the Palmer-Moore Co., of Syracuse, N. Y., is perfectly willing to sell persons what they want, as long as they want something good, a water-cooled motor has been designed and will be installed in Palmer-Moore trucks instead of the air-cooled motor, for anyone who has a preference for water.



PALMER-MOORE WATER COOLED

The Palmer-Moore 1,600 pound capacity truck and its two-cycle air-cooled motor were described in detail in Motor World of April 3 last. In the new engine no changes whatever have been made in the motor, apart from those incidental to the use of water for cooling; the radiator is of the dash type and the flywheel forms the fan. Briefly, the motor is a three-cylinder two-cycle machine of the three-port type. Its peculiarity, and the feature in which it differs from all other two-cycle motors and which, the makers state, eliminates most of the objections that have been made to two-cycle motors, is the employment of rotary shutters in the ports. A good designer has comparatively little difficulty in making a two-cycle engine that will run well at low speeds, or one that will run well at high speeds; but when it comes to making one that will perform equally well at all speeds the problem is exceedingly difficult —in fact, it is one of the most difficult problems in two-cycle motor building. In a general way, the reason is that the port areas suitable for one speed are not always suitable for other speeds. The Palmer-Moore people have attacked the difficulty by placing shutters in the ports so that the areas can be varied and speeds changed without backfiring, choking or other manifestations of distress that are so well known in two-cycle engines with ordinary port systems.

The motor has a bore and stroke of 4 inches—in technical parlance it is a "square" engine—and is rated at 20 horsepower; the maximum speed is comparatively low, being 950 revolutions per minute. The truck has a wheelbase of 102 inches, 36-inch wheels, 2½-inch solid tires front and 3-inch rear, and either planetary or three-speed selective sliding gear change-speed mechanism. Standard equipment in the air-cooled model includes the planetary gear, and in the water-cooled model the sliding gear with disk clutch. The price of the standard air-cooled chassis is $1,300 and of the water-cooled chassis $1,450. The water-cooled model can be equipped with planetary gear, which resuces the list price by $50.

Washington Regulates Vehicle Loads.

The State of Washington will, after January 1, be numbered among those to regulate the ratio between the width of tire and the load which the vehicle may carry; and that the statute may be respected its framers have incorporated provisions for nominal fines for the first and second offenses and $250 or 90 days for the third.

The law provides that for tires two inches wide or less, the maximum load shall not exceed 400 pounds an inch of width of tire. This will make the maximum load permitted on a wagon with two-inch tires 3,200 pounds, or 1,600 pounds for a one-inch tire. For tires wider than two inches and up to five inches, the maximum load is not to exceed 400 pounds an inch of width of tire plus 50 pounds an inch in excess of two inches of width of tire. With a five-inch tire the ratio of weight per inch of tire width is increased to 500 pounds an inch plus 70 pounds an inch for tires in excess of five inches.

The maximum load includes the weight of the vehicle. The law also provides that the load must be evenly distributed on each axle.

What Constitutes Spark Advance.

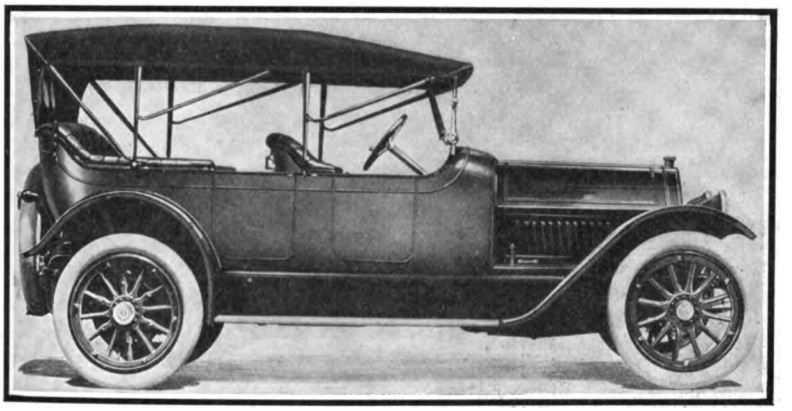
While it may seem almost as unnecessary as explaining which end of the alphabet comes first, it is a fact that many who drive cars do not know that the spark is advanced by shifting it in the direction opposite to the rotation of the crankshaft and is retarded by shifting it in the direction of rotation; the idea that "advancing" means shifting in the direction of rotation is by no means uncommon.

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SPEEDWELL ROTARY VALVE "SIX" UNDERGOES CHANGE

Valves Fluted and Fitted with Rings and Improved Manifolds Adopted — Chassis the Same with Much Equipment Added.

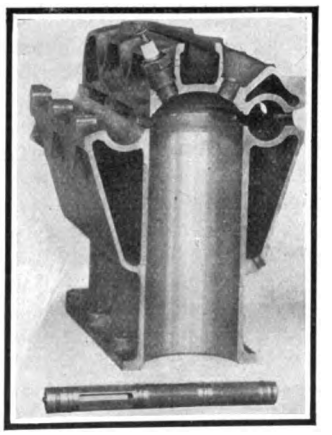
With a year of service at the hands of users behind it, though the makers freely admit that it has required more than seven years of constant work to bring it to its present perfected form, the Mead type rotary valve engine which the Speedwell Motor Car Co., of Dayton, O., uncovered at the last New York automobile show, has been materially altered and improved, and in its new form it is markedly simpler than it was in the old. The principle of operation remains exactly as it was, though the valves themselves have been slightly altered, the better to ensure gas tightness, and the external appearance of the motor has been made quite unlike its predecessor by reason of new manifolds, and a new location for most of the accessories.



SPEEDWELL-MEAD ROTARY VALVE "SIX" WHICH SELLS FOR $2,850

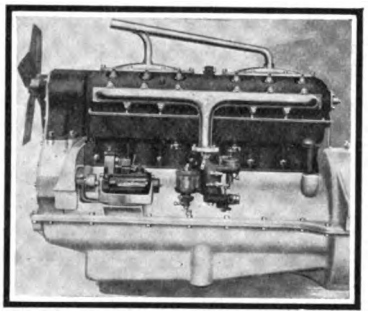
Barring the greatly increased accessibility which the new construction brings about, the most important change that has been made is in the valves. As heretofore, each block of three cylinders has its own rotating member for intake ports and another for exhaust ports, the provision of two rotating valves for each cylinder distinguishing the system from the Henriod system which is used in Darracq engines and in which a single rotating member serves alternately for both intake and exhaust. But instead of being smooth, the Speedwell-Mead valves now are lightly fluted, the indentations serving to render lubrication more positive and at the same time to ensure against the possibility of gas leaks. Another important change is embraced in the location of piston rings at each end of each valve member and also between each port, the rings serving to prevent the leakage of gas from one cylinder to the other. As in the past, each valve member is made in two parts—one part for each block of three cylinders—which are flexibly joined through the intermediary of an Oldham coupling.

As regards the rest of the motor, such changes as have been made concern externals more than anything else. The bore and stroke remain the same—namely, 4⅛ x 5¼ inches, respectively—and though the A. L. A. M. formula gives a nominal rating of but 40.8 horsepower, the actual power developed is well in excess of that figure. As a matter of fact, brake tests have demonstrated that from 400 revolutions a minute to 2,000 revolutions, the power curve rises in a practically straight line from 15 to nearly 70 horsepower; the makers rating of 60 horsepower, therefore, is conservative. In reference to the nearly proportionate increase in power with the increase in speed, it is pointed out that this feature is largely due to the positive action of the valves and to the comparatively large port area which they afford. The torque remains practically constant throughout the same range of speeds. Lubrication is carried on by pressure feed, a double pump being used; one compartment of the pump forces oil directly to the three main engine bearings, thence through hollow crankshaft to connecting rod bearings and the other compartment oils the valves directly through eight leads to each. The valves are driven by a combined helical gear and "silent" chain system, as heretofore, their speed being one-fourth crankshaft speed.



ROTATING VALVE AND PORTS

New manifolds for both intake and exhaust constitute the chief element of newness in the external appearance of the motor. Instead of being a continuous unit, the exhaust manifold now is in two units, each of which serves a block of three cylinders; at the same time, the ejector principle has been adopted by way of assisting perfect scavenging of the residual charges. The intake manifold now is very much simpler than it was and careful attention has been given to it to secure flexibility and the entrance of full charges. Instead of being what may be termed a triple "T," it is a single "T," and is fully water-jacketed to assist in the vaporization of low grade fuels. Water pump and magneto positions also have been changed, to increase accessibility and simplicity and a new type of water manifold adopted. As in the past, the clutch is housed in the flywheel, which is enclosed and securely bolted to the gearset, making a unit power plant which is supported at three points.



INTAKE SIDE OF MOTOR

Coincident with the alterations that have been made in the motor, some few changes also have been made in the chassis to which it is fitted, though most of them have to do with added equipment. Briefly, they are as follows: Power tire pump added; indicator on toe board to show condition of electric lighting and starting battery; Warner speedometer added; oil feed indicator placed on dash; electric lighting switches placed on heel board; rear seats widened; front seat fitted with single undivided cushion; quick-detachable curtains adopted; trouble lamp socket placed on dash; larger electric horn with operating button on steering column; gear shift lever lock pro-

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vided; wire wheels made optional at slight additional cost.

The wheelbase length of the standard chassis is 135 inches and it is mounted in front on the conventional semi-elliptic springs and in the rear on three-quarter elliptic members. The transmission of power is through dry disk clutch and selective gearset with the control lever in the center of the footboard, the steering gear being at the left side. Wheels of all five-passenger models are shod with 36 x 4½-inch tires both front and rear, the seven-passenger models being carried on 35 x 5-inch tires. Five- and seven-passenger open models list at $2,850 and $2,950, respectively, the price including the following list of equipment:

Top with boot and quick-detachable side curtains; windshield; Warner speedometer; electric lighting and engine starting system; electric horn; dash ventilators; Firestone demountable rims with one extra and tire carriers; power driven pump; robe and foot rails; and the usual complement of tools, tire repair kit, jack and so forth.

Kellogg's Air Starter for Ford Cars.

Well and widely as the air pumps manufactured by the Kellogg Mfg. Co., of Rochester, N. Y., are known, it is by no means as well known that the company makes, and has made for a considerable time, complete air starting systems. Such, however, is the case, and when it is stated that the Kellogg starters are installed in such cars as the Stevens-Duryea and the older Pierce-Arrow models, it is unnecessary to say anything more as to the merits of the outfits. Kellogg pumps are employed in the air-starting systems of other cars, including the Winton, which, as is well known, is a pioneer in the use of pneumatic substitutes for the fast disappearing hand crank.

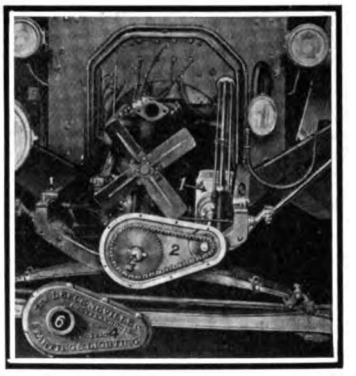
For the coming season's business the Kellogg company not only has considerably improved its standard line of pumps and starting systems, but has brought out a complete system especially for Ford cars, consisting of a power pump, air tank and cranking cylinder. With this equipment the motor is turned over much more rapidly than it could be cranked by hand. The whole system is brought down to the simplest possible form consistent with efficiency; the price will be between $60 and $70, complete and ready for installation. The chief improvement in the power pumps consists of making them wholly of metal; the line now includes not only two- and four-cylinder models, but a six-cylinder pump, which just has been added and is designed for the heaviest work in its class. Another addition to the line is a cold-weather priming device to facilitate starting.

LEECE-NEVILLE, TOO, ADDS FORD STARTER AND LIGHTER

Apparatus is Easily Installed and Operates Through Sprockets and Chain—Powerful Enough to Propel Car on "High."

An electric starting and lighting system, designed especially for Ford cars, that will not only do what usually is expected of a starting and lighting system but will also propel the car on high gear in case the motor should stall, has been placed on the market by the Leece-Neville Co., of Cleveland, O. And not only is the outfit claimed to be all that it should be in the matter of operation, but it can be applied to Ford cars without difficulty, and without making mechanical changes.

The accompanying illustration shows the appearance of the Leece-Neville motor-generator unit and its drive installed, the



LEECE-NEVILLE FORD SYSTEM

cover of the chain case having been removed. The chain case is packed with grease and the drive is quiet and efficient both when the engine is being cranked and when it is driving the generator to furnish current for the battery. The large sprocket, 3, is pinned on the end of the engine shaft and the motor-generator is mounted partly under the steering column in the engine space.

Of course, the principles of operation are the same as in other complete systems—that is, a button is pressed to start the engine, and when the engine "takes hold" the driving current is automatically shut off and the engine drives the machine as a generator, replenishing the battery from which current for lighting and starting is drawn. The cranking speed is 150 revolutions a minute. With this outfit all the lamps on the car are electric; six-volt bulbs are used and the light has the steadiness that is a feature of lights supplied with current from a battery. The system is substantially built despite its moderate weight.

Here's the Electrically Operated Window.

Carrying the frameless limousine window idea a little further than any one else has carried it ,a foreign body builder has developed what is styled a self-opening and closing window that is electrically operated, though just how electricity is made to do the work is not divulged. It is stated, merely, that pressure on one button raises the window, release of the button stopping the window at the desired height. Another button is provided to lower the window; the mechanism is hidden.

Claims Defective Car Caused Death.

Somewhat akin to the Cadillac "collapsed wheel" case, wherein a car owner is suing for damages growing out of the breaking down of a wheel, is the suit which has been brought in Osceola, Ia., by Mrs. Alice Goldsmith against the Moyer Automobile Co., an Iowa dealer. She claims her husband met his death June 1, 1913, when his car overturned, and she claims the accident was caused by defective brakes, leakage of axle grease and other faulty mechanism. She asks for $50,000.

Gets One Dollar for Broken Axle.

The Mandel-Frisch Automobile Co., of Sioux City, Ia., was given a verdict of one dollar last week in the Sioux City District Court, in an action brought against the municipality for an axle broken when the wheels of a car owned by the company dropped into a hole in the street. The automobile company charged that the city had improperly finished a piece of sewer construction. The jury deliberated for five hours before it rendered its verdict.

Goodyear "Non-Skid" Now "All Weather."

The Goodyear Tire & Rubber Co. has eliminated "non-skid" from tire terminology, so far as Goodyear tires are concerned. Hereafter the Goodyear Non-Skid will be known as the "All-Weather" tread tire, the change being made on the principle that skidding is not a matter of seasons, and also because the use of non-skid tires, as must be apparent to all, is enormously on the increase.

Seasoning New Spark Plugs.

It is not unusual in a new spark plug to find that the bushing is rather loosely screwed in. This often is done purposely in order to allow the new porcelain core to expand under the heat. After the plug has been in use for a short time and has become somewhat "seasoned" the bushing may be tightened, but it is better not to do so at first unless there is a leak.

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CORRESPONDENCE

PREST-O-LITE ENGINEER FINDS COMFORT IN ELECTRIC TEST.

To the Editor of Motor World:

At the conclusion of the Indianapolis Motor Speedway tests last summer, I made the statement that the generation of electricity by an automobile motor involved a power loss of from 5 per cent. to 12 per cent., depending upon the horsepower of the motor. For this statement I have been very liberally roasted in your columns by Mr. Kebler, Mr. Rushmore, Mr. Bailey and others of the electric lighting and starting fraternity, most of whom claimed the loss would be only a fraction of one per cent.

I now want to call your attention to the Packard test recently conducted on the Long Island Speedway, which shows that at 20 miles an hour the loss was 5.2 per cent.

You will also note that in the Packard test the power loss of 3.3 per cent. recorded was at 40 miles per hour. Practically, this may be disregarded, for the reason that 40 miles per hour in daily service is unusual.

Since the amount of power required to operate the generator remains the same whether the engine be large or small, it becomes evident that the burden of operating the generator is far greater, proportionately, in a small engine than in a large engine. The Packard motor has six cylinders and is rated at 38.4 horsepower, A. L. A. M. In the Indianapolis Speedway tests a motor of 32.4 horsepower, A. L. A. M., operating at the same speed, 20 miles per hour, showed a power loss of 6.9 per cent.

Taking into consideration that the Packard test was made on a straightaway, whereas our tests involved the curves of the Indianapolis Motor Speedway, and further considering the fact that in our tests the start in each instance was made on the measured gallon of fuel, whereas in the Packard test the starting was made on a reserve supply of fuel, I think the approximate accuracy of the Indianapolis Speedway tests is confirmed in all respects by the Packard test. Indeed, the Speedway tests would seem to be of more practical value as applied to the conditions of daily driving, which involves starting and stopping, turning corners etc.

It is probably true that the buyer of a Packard is not greatly concerned by the loss of 5 per cent., or even a greater percentage, of his fuel. But isn't the buyer of a medium-priced, moderate-powered car, who is bound to suffer a much larger proportion of loss than 5 per cent., entitled to know it? I think he is.

If the gentlemen who attacked the Indianapolis Motor Speedway tests so promptly and so vigorously in your columns will now proceed to "pooh-pooh" the Packard test in the same fashion, I assume that you will accord the necessary space, and I am certain your readers, as well as the undersigned, will be greatly edified.

R. H. COMBS,
Prest-O-Lite Co., Indianapolis.

WHY LOW-PRICED ELECTRICS ARE SLOW IN APPEARING.

To the Editor of Motor World:

Referring to your editorial "The Popular Priced Electric Car," I am glad to see interest taken in this matter and agree with what you say, but there is something which everyone overlooks who is not in the business, when he writes on the low-priced electric. Your editorial, for instance, while not distinctly describing such a car as you think would be satisfactory, refers to 100 miles on a single charge of the battery, also to an average speed of 22 miles on a test run made two years ago.

Now, there is the whole problem. If the people will buy and be satisfied with an electric car which will run not faster than 15 miles an hour on a level road, meaning that it would give a man actually around town from 10 to 12 miles of service in an hour, which is about twice what a horse would give, and a mileage under such circumstances of not over 40 miles as a maximum and reduced somewhat in bad going, a fairly low-priced car can be built.

The car which will give 100 miles on a single charge at 20 miles an hour, with an average even of not better than 17 or 18 miles, requires a certain amount of electric energy to overcome the road and wind resistance, and therefore a certain size motor and a certain size battery, all of which the electric vehicle engineers can figure to a nicety. That weight battery and that weight motor are almost fixed in cost, regardless of quantity production, because lead, copper, hard rubber and hand assembly are not affected very much by quantity and the copper wire, etc., is made not only for automobiles but in immense quantities for other demands.

With given weights of these principal items and a given speed, certain strengths and weights of axles must be had, certain size tires to carry the load, etc., so the answer every time one figures it is an original cost away beyond what can be termed a "popular" priced car.

Now, in a gasolene car, there is not much difference between certain features of the performance of the cheap car and the high-priced car—that is, one will go about as fast on the road as the road permits of traveling and the cheap car will go just as far as the high-priced car by putting in gasolene as often as the tank is empty.

With an electric it is different, and while doubtless the most of the electric vehicle manufacturers have catered to the very best trade because of the nature of service their cars offered and the demand which people made upon them for better and better goods, there is a certain fundamental distinction, and until there is a demand for an electric car which will go only at slow speeds and with a smaller radius than present cars, reduction in cost which might be obtained from less expensive trimming, upholstery and a lessened luxury and comfort will not avail as much to reduce the price as those who have not had opportunities to investigate thoroughly, at first feel.

It will be foolish to say that lower prices will not sometime prevail, also foolish to assume that we are not going to have further improvements in the cars, such as have already taken place, but if I may be pardoned for using the expression, there has been a great deal of loose talk about a low-priced electric car, and whenever you ask those who made these statements what they want the electric to do, they usually describe exactly the cars now being built, so far as service is concerned, only they would be satisfied with less expensive painting, upholstery, general trimmings and equipment.

They want at least a four-passenger brougham at a 20-mile speed on the level, 75 to 100 miles per charge at 20 miles an hour, batteries accessible by not being under the seat or body, and a low-hung body, both of which make for a long wheelbase; a good hill-climbing ability and plenty of room and comfort in the body, and all those things cannot be given at low prices.

Another thing which is overlooked in the comparison of prices is that electric limousines and broughams are being compared with low priced gasolene runabouts.

When these are compared with the limousines of the better gas cars, the price question is turned about, as indeed it should be, as though the gasolene limousines are larger than the electrics, they are no better in any particular as to quality of body building, paint, upholstery and fittings.

My only reason for writing is that quite a little injury may be done to the established electric vehicle industry by leading the public to feel that all the things they want can be furnished for much less than at present.

I say all this and at the same time want to add that per mile of service an electrtic car can be driven for less money than a gas car and for most requirements of delivery service, can deliver packages per "package mile" cheaper than gas car delivery work.

H. H. RICE,
The Waverley Co., Indianapolis.

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SIXTH TOLEDO SHOW NEEDS TWO FLOORS FOR EXHIBITS

Pleasure Cars of 37 Makes, Seven Brands of Trucks and Five of Electrics Staged—Complete List of Exhibitors.

With enough exhibits to fill two whole floors, the sixth annual Toledo show, which was opened on Saturday night, 6th inst., and will hold the boards until the 13th, is housed this year in the spacious Toledo Factories Building instead of in the Terminal Auditorium, where it always has been held in the past. The Toledo Auto Show Co., which is composed of prominent members of the trade in that Ohio city, has the exposition under its wing, so to speak.

Pleasure cars and commercial vehicles are segregated, the former being on the first floor of the building and the latter, together with a liberal sprinkling of accessory exhibits, are on the third floor, though fast-moving elevators make the skipping of the second floor scarcely noticeable. All told, there are 36 separate exhibits, which include pleasure cars of 37 different makes, commercials of seven brands and five accessory displays, to say nothing of five different brands of electrics. The complete list of exhibitors follows:

Abbott Motor Sales Co., Abbott-Detroit; H. J. Adams, Reo pleasure and commercial; Atwood Automobile Co., Overland pleasure and commercial, Marmon pleasure and Standard electric; Auto Distributing Co., Regal; Banting Machine Co., Patterson; Baumgardner & Kibby, Oakland; Blevins Auto Sales Co., Studebaker pleasure and White commercial; Bunnell Auto Sales Co., Cole and Chevrolet pleasure, Detroit electric, and Federal trucks; Cornelius Hohly Auto Co., Krit; Gamble Motor Car Co., Peerless, Hudson, Garford and Ohio and Baker electric; Gauntlett Auto Sales Co., Buick; Roberts-Toledo Auto Co., Ford pleasure and commercial; E. W. McBurg, Stearns-Knight and R. C. H.; Landman-Griffith Co., Maxwell and Lozier; Lichie Automobile Co., Cadillac; Maumee Motor Co., Empire and King; Standard Automobile Co., Packard, and Rauch & Lang electrics; H. E. Throne, Mitchell and Paige-Detroit; Union Supply Co., Pierce-Arrow and Chalmers; C. J. Clapp, Winton; White Motor Car Co., White pleasure and commercial; W. H. McIntyre Co., Detroiter, Jeffery and Lyons-Knight; Grasser Motor Co., Hupmobile pleasure and Gramm commercial; Allen Motor Co., Allen; First Garage & Motor Co., Partin-Palmer; Greyhound Cyclecar Co., Greyhound cyclecars; Toledo Rubber Co., supplies; Ray-Kuhn Co., supplies; Bock Bearing Co., bearings; Lewis Foundry Co., castings and motor parts; Lima Cyclecar Co., Lima cyclecars; Erie Supply Co., supplies.

Helping the Amateur Sign Maker.

Although there are times when a very poorly made sign—a slap dash affair—will attract attention and hold it almost because of its very poorness, it is generally the well-lettered, easily-read sign that draws the gaze, and it is because not every one can wield a brush and get good results that the sign shown by the accompanying illustration has been placed on the market; incidentally, the story it tells is a sermon in itself. The sign is made by the Multiform Sales Co., of Chicago, Ill.

In its simplest aspect it is merely a substantial, neatly-finished wooden frame holding a number of thin metal strips separated



MULTIFORM ADJUSTABLE SIGN

by very narrow slots. The letters are printed on separate tabs and are merely hooked into place one after the other; they simply hang from the metal strips. As the letters are all made on tabs having the same margin, it is impossible to gauge the spacing wrongly and the resultant sign must be a presentable one. And as the letters are plain block letters the sign can be read for a long distance. The frames are made in four sizes and are sold complete with the necessary letters and figures, punctuation marks, etc. Two sizes—8 x 15 inches and 13 x 15 inches, the latter size being the one illustrated—sell for $4.50 each, together with 220 letters and figures. The two other sizes are 15 x 28 inches, with which there is included 440 letters and spaces, and 22 x 37 inches, with which there is included 660 letters and spaces.

F. H. Berger former chief engineer of the Oakland Motor Car Co., who only recently returned from Europe, has opened an office of his own in the Sun building in Detroit. He will act as a consulting engineer and also develop several devices which he has in mind.

MAKE PARCEL POST LIMIT 50 POUNDS AND CUT RATES

New Changes in Several Zones to Become Effective January 1—Books to Be Admitted in March—Other Innovations.

Postmaster General Burleson's recommendation that the weight limit of the parcel post be raised from 20 to 50 pounds in the first and second zones has been approved by the Interstate Commerce Commission; this and other changes will go into effect January 1. Rates are to be reduced in the third, fourth, fifth and sixth zones. The maximum weight in all zones above the second becomes eleven instead of twenty pounds. Books will be admitted, but not until March 16, 1914.

For the third zone rates will be reduced from seven cents for the first pound and five cents for each additional pound to six cents for the first pound and two cents for each additional pound; for the fourth zone, from eight cents for the first pound and six cents for each additional pound to seven cents for the first pound and four cents for each additional pound; for the fifth zone, from nine cents for the first pound and seven cents for each additional pound to eight cents for the first pound and six cents for each additional pound; for the sixth zone, from ten cents for the first pound and nine cents for each additional pound to nine cents for the first pound and eight cents for each additional pound.

It is provided by the Postmaster General with the consent of the commission, "that the rate of postage on parcels containing books weighing eight ounces or less shall be one cent for each two ounces or fractional part thereof, and on those weighing in excess of eight ounces the zone parcel post rates shall apply."

This is to be effective March 16, 1914.

The Postoffice Department also has arranged that senders of packages by parcel post will not have to lick the stamps. "Under such authorization," states the department, "when a parcel is presented for mailing, the clerk receiving it, after collecting the required postage, may endorse on the parcel the amount of the postage, which later will be affixed by an employe.

Twelve Bills for One-Cent Postage.

One-cent postage promises to be one of the live issues in the present session of Congress, 12 bills, at least, having been introduced with this object in view. Among other things, it is contended that the increased revenue from the parcel post will render the cut more likely.

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A. A. A. ADOPTS STANDARD FOR TRAFFIC REGULATION

Outlines Rules for Pedestrians as Well as for Vehicles—Believes its Suggested Code Would Considerably Clarify Situation.

They do some things better in France. For instance, they regulate pedestrians as well as wheel traffic. In doing so, they even place a burden of responsibility on pedestrians, who quite frequently are arrested even when injured by a vehicle of any sort.

In this country, the pedestrian is unrestricted; he does as he pleases; he knows no regulations and, although it long has been perfectly obvious that the one way quickly and gently to reduce the number of accidents is to regulate the pedestrian, and to place upon him a burden of responsibility, no wise, reverend or any other sort of legislator has dared propose anything of the sort. It is much cheaper to join in a hue and cry and denounce automobilists, truck drivers and street car companies.

In a praiseworthy effort to lend its weight to the reduction of accidents, the American Automobile Association, at its meeting in Richmond, Va., on the 2nd inst., adopted "Rules of the road and regulations of road traffic," the full text of which has just become available and which, among other things, takes note not only of the need of regulating pedestrians but at least of some ways in which they best may be regulated.

The rules and regulations are the product of H. M. Rowe, president of the Automobile Club of Maryland, of Baltimore, who, in introducing the regulations, said:

"No attempt is made to define regulations for control of street cars or any other public service vehicles or for such other uses of the highways as are usually covered in special laws or traffic rules to meet unusual conditions.

"The purpose of these rules and regulations, therefore, has been limited to include only those of a general character, it being understood that they may be supplemented as found necessary to meet local conditions.

"No penalties or fines have been designated or suggested, but it is recommended that they should be included in any draft of bills that may be prepared for legal enactment.

"The general principles that have been observed in framing these rules of the road and regulations of road traffic are these:

1. That all traffic rules and regulations for the control of the movements of vehicles and pedestrians are intended (a) to reduce danger from all sources to the minimum and to prevent accidents by removing the causes therefor; and (b) to facilitate the movement of vehicles and pedestrians expeditiously and safely.

2. That roads and roadways are intended for the use of vehicular traffic and that vehicles should be protected in their reasonable use of the same.

3. That sidewalks and designated crossings are intended for pedestrian traffic and that pedestrians should be protected in their reasonable use of the same.

4. That the elimination of danger to persons and property is determined largely by the extent to which pedestrians and vehicles can be confined to the occupancy of those thoroughfares provided for them—namely, roads and roadways for vehicles and sidewalks and crossings for pedestrians.

5. That vehicles should have the right of way on roads and roadways except at crossings; that pedestrians should have the right of way on sidewalks and at designated crossings.

6. That pedestrians should, if possible, not be permitted to occupy roads and roadways, except at crossings, for any purpose whatever and that when any deviation from this rule is necessary so that they may enter and depart from street cars and other public carriers they should be protected from vehicular traffic by suitable standards, railings or other barriers.

7. That accidents can only be reduced to the minimum by eliminating as far as possible all of the factors contributing to them, not only those arising from the improper use of vehicles on roads and roadways, but also those arising from the improper use of pedestrians of roads, roadways, sidewalks and crossings.

Definitions—Definitions of terms used herein. The following terms wherever used herein except as otherwise specifically stated shall be defined as follows:

Road: The word "road" includes highways, streets, avenues, parkways, boulevards, viaducts, bridges, alleys, and every public way used or laid out for the use of vehicles.

Roadway: That portion of any road that is included between the curb lines or edge thereof and is designed for the use of vehicles.

Curb: The outside boundaries of that portion of a road designed for the use of vehicles whether marked by curbstones or not so marked.

Vehicles: All conveyances of every kind and description which are used on roads, propelled in whatever manner or by whatever power; i. e., that may be driven, ridden or propelled (excepting baby carriages).

Pedestrians: All persons occupying, going or moving on foot on roads, roadways and sidewalks; i. e., all those using roads or thoroughfares when not carried by vehicles propelled by animals or by motor power.

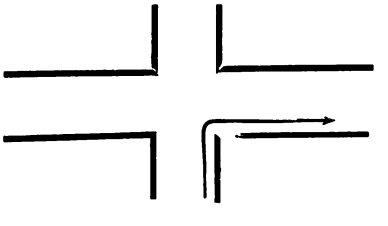
ARTICLE 1—RULES OF THE ROAD FOR VEHICLES.

Sec. 1. Vehicles Keeping to the Right—Vehicles shall keep to the right-hand side of the road.

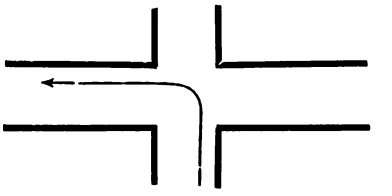
Sec. 2. Vehicles Meeting—Vehicles meeting shall pass each other to the right of the center of the road.

Sec. 3. Vehicles Overtaking Others—All vehicles overtaking others shall, in passing, keep to the left of the center of the road and shall not pull over to the right of the road until entirely clear of the vehicle passed.

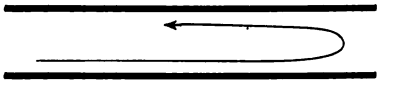
Sec. 4. Turning to the Right into Another Road—All vehicles turning to the right into another road shall turn the corner as near the curb as practicable. Thus:



Sec. 5: Turning to the Left into Another Road—All vehicles turning to the left into another road shall pass to the right of and beyond the center of the intersecting road before turning. Thus:



Sec. 6. Crossing Roads—All vehicles crossing from one side of the street to the other shall do so by turning to the left so as to go in the same direction as the traffic on each side of the street. Thus:



Sec. 7. Stopping on the Road—A vehicle shall stand only with its right-hand side to the curb, except in the open country, where standing on the left will in no way interfere with traffic.

Sec. 8. Slow Vehicles—Slow vehicles shall keep close to the right-hand side of the road or to the right-hand curb, leaving left-hand space for faster moving vehicles to pass—the slower the speed the nearer to the curb.

Sec. 9. Notice of Approach—All motor vehicles before passing other vehicles from the rear shall give notice of approach by horn or other signal before passing.

Sec. 10. Loading and Unloading—Vehicles must not remain backed up on the side of a road or to a curb except to load or unload, and then it must be in such a manner as not to seriously interfere with traffic.

Sec. 11. Obstructing Crossings—No vehicle shall stop on crossings except in case of accident or other emergency or when directed to stop by a police or traffic officer.

Sec. 12. Stopping Near Corners—No vehicle shall stand within 10 feet of any intersecting street corner or crossing.

Sec. 13. Right of Way—Vehicles moving in a northerly or southerly direction shall have the right of way over vehicles moving in an easterly or westerly direction. United States mail, fire apparatus, ambulances, police patrols, and vehicles of physicians when so designated, shall have the right of way in any street and through any procession.

Sec. 14. Signals When Stopping or Starting—Drivers of all vehicles shall indicate by hand or whip their intention of stopping or starting, and no vehicle shall be started forward or backward until the driver has first looked to see that the way is clear.

Sec. 15. Passing on the Left or the Center—No vehicle shall pass to the left of the center of any road except where passage on the right of the center is blocked or where the roadway is occupied by slower moving vehicles, and then only in case there is an open roadway to the left of the center of the road.

Sec. 16. Stopping in Center of Road—No vehicles, unless in emergency or to allow another vehicle or pedestrian to cross its path, shall stop in the road except near the right-hand side or curb thereof.

Sec. 17. Stopping on the Opposite Side of the Road—Vehicles moving forward on the right side of the roadway wishing to stop on the left side shall turn around before stopping so that when motion is resumed said vehicles shall proceed along the right side of the roadway.

Sec. 18. Backing of Vehicles—No vehicle shall be backed without ample warning having been given, and while backing care must be exercised not to injure either persons or other vehicles in the rear.

Sec. 19. Lights—All vehicles occupying any road or roadway shall carry lights at night between one-half hour after sunset and one-half hour before sunrise. Vehicles carrying a single dash lantern shall

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carry same on the left hand side so that it can be seen from either direction.

Sec. 20. Reasonable Care—All vehicles shall be driven carefully with due regard for the safety and convenience of all other vehicles and pedestrians. Nothing herein or omitted therefrom shall be construed or held to relieve any person or vehicle using, or traveling, or being upon any road for any purpose whatever from the exercise of all reasonable care to avoid or prevent injury through collision with all other persons and vehicles.

ARTICLE II—RULES OF THE ROAD FOR PEDESTRIANS.

Sec. 1. Pedestrians shall keep to the right and shall not stop or stand on sidewalks or road crossings so as to obstruct their free use by others.

Sec. 2. Pedestrians shall not stand or walk on or in any way occupy roads or roadways except while crossing same at indicated crossings.

Sec. 3. Pedestrians shall not stop upon a roadway from a sidewalk or at crossings or elsewhere without first looking to see all traffic approaching that point from either direction, and they shall not cross the roadway diagonally or at any other point except at regular indicated crossings. Neglect to observe the requirement and carelessness and, in case of accident resulting in injury, the responsibility for said accident shall be placed upon the person so injured unless it can be proven otherwise. Nothing in this regulation, however, shall relieve drivers of vehicles from being constantly vigilant, exercising all reasonable care to avoid injury to persons and property.

Sec. 4. Pedestrians shall have the right of way over all vehicles at designated road crossings only, but in crossing they shall not loiter and shall continue to cross the roadway without stopping.

Sec. 5. No person shall jump, hang or ride upon any vehicle while standing without the consent of the owner and under no circumstances while in motion, while the vehicle is on a road or roadway.

Sec. 6. No person shall use roller skates, coasters, tricycles or any other vehicle, toy or other article or wheels or runners (excepting bicycles) or operate the same on any road or roadway.

Sec. 7. No one shall carry children on bicycles under the age of five years.

"Women "Students" Discuss Automobiles.

The Committee for the Prevention of Reckless Driving and Street Accidents of the Society for Political Study—it sounds formidable, anyway—is out to solve the automobile accident problem; the precise connection between automobiles and political study is not explained, but the committee, of which Attorney Edith Reiffert is chairman, met this week in the Hotel Astor, New York City, and, with members of different women's clubs, discussed the situation. Miss Reiffert herself couldn't see the effectiveness of saving babies through pure milk agitation, if instead they are to be "slaughtered" by automobiles.

As is customary in such gatherings, someone presented statistics showing the alleged deadliness of the automobile, several people gave their opinions and recommendations were adopted; one very sensible suggestion was that secular and religious schools open their grounds to the children so they will not be obliged to add to the element of danger by playing in the streets. The chauffeur came in for a harrying, and Mrs. Simon Baruch declared she never allowed her chauffeur to drive faster than 12 miles an hour.

"SMOKE" AND "DENSE SMOKE" NOT THE SAME, SAYS COURT

Appellate Division of New York Remits Fine Imposed on Railroad—How the Ruling May Apply to Motor Cars.

Although the law specifies "dense smoke," and the vigilant traffic "cop" continues to arrest automobile owners whenever he feels in the humor and regardless of the density of the smoke their cars may emit, there is a big difference in smoke—some of which is not smoke—according to a decision handed down by the Appellate Division of the New York Supreme Court, First Department. The gist of the opinion is that smoke which is produced when the "smoker" is doing his best to avoid it by mechanical means and which therefore may be considered more or less necessary and unavoidable, does not come within the meaning of the sanitary code of New York City.

This provides that "no person shall cause, suffer or allow dense smoke to be discharged from any building . . . locomotive engine or motor vehicle . . . . within the jurisdiction of said city" and the action in question was brought by the City of New York against the New York Central & Hudson River Railroad. It was charged that a roundhouse gave out a dense smoke and the court stated that the question upon which this litigation turned was whether the railroad could lawfully be put off the streets of the City of New York.

Referring to the generation of power in railroad steam engines—and by inference in automobile motors—the court said: "It is clear that the ignition of this fuel is always accompanied by more or less smoke, and in a prosecution under this ordinance it was competent for the defendant to show . . . . that the best method for lighting fires was that adopted by the defendant, although it necessarily was accompanied by a certain amount of smoke, and that the method actually adopted by the defendant caused as little smoke as was possible to obtain the desired result. . . .

"There was no evidence to show that there was an excess of smoke over that necessary for the operation of the locomotive engines and no evidence to show that by any other method than that adopted . . . . . could a fire be started in a locomotive engine which would produce less smoke than that produced by the locomotive engines of the defendant."

Upon this ruling—that the company did the best it could and that the authorities failed to show that any way existed for avoiding the smoke—the fine which had been imposed in a lower court was ordered remitted. The railroad holds a right to the streets by virtue of a franchise and, having that right—which automobiles also possess—was not held to do an unreasonable thing.

Hunting Accident Costs Jenatzy's Life.

Camille Jenatzy, who won world-wide fame as an automobile racing driver in 1903 when he won the James Gordon Bennett cup race, was accidentally shot at Habay la Neuve, in the Belgian Ardennes, on Sunday, 8th inst. The accident was caused by darkness, in which Jenatzy was mistaken for a deer by a hunting companion and shot in the thigh with an explosive bullet; he died from loss of blood before he could be transportetd to a hospital.

Jenatzy's first prominent appearance as a racing driver was made in 1902 when he drove a car of his own make in the Ardennes Circuit race in France but was wrecked through the collapse of a wheel. It was in the following year that he won the Bennett cup race at the wheel of a German Mercedes. The race was held in Ireland on July 2, and Jenatzy finished the 369 miles in six hours 32 minutes elapsed time, which is at the rate of 39.56 miles an hour. In 1905 Jenatzy made his first American appearance as a contestant in the Vanderbilt Cup race, which was held on Long Island on October 14th. He drove a Mercedes but was forced out at the end of 84 miles with a cracked cylinder. In 1906 he again competed for the Vanderbilt cup over the Long Island course, the race being held on October 6th, and finished fifth in a Mercedes; that was his last appearance in America. He was a slightly-built, nervous foreigner whose red hair and pointed goatee singled him out in any crowd. After quitting automobile racing he entered the trade with an automobile tire of his own.

Traffic Cop Halts Even Uncle Sam.

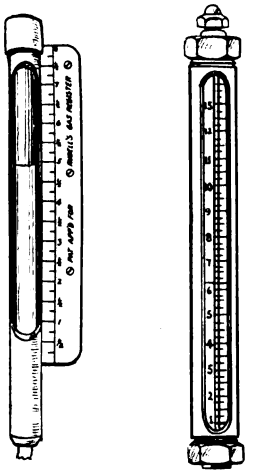
Although holding up the United States mails is a penal offense, and although the postal authorities in New York City claimed the mail motor trucks should be exempt from traffic regulation, the city has removed them from the privileged class—such as ambulances, fire engines, etc.—and drivers who exceed the speed with the mail carrying vehicles and who otherwise disregard the "corner coppers" are being arrested. The action followed a number of accidents which were attributed to the high and reckless rate of speed made by the truck drivers. The latter, however, claimed they had orders to "make time" and had to do it or lose their jobs. The first driver to be arrested, however, was promptly discharged by the court on the ground that recklessness had not been proved.

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DEVICES THAT SOUND THE GASOLENE TANK

Manifold Functions of Gauges of Various Types That May be Fitted by Any Garage Mechanic—Their Advantages Over the Measuring Stick Method —Wherein Different Types Differ and How They Operate.

The story is told of a man who was absolutely certain that his fuel tank was full when he left the garage; there could be no doubt of it, for he had specifically instructed the garage attendant to replenish his supply against his leaving early the following morning. Ergo: The fuel must be in the tank. Yet, when he had travelled scarcely more than a mile from the garage he found himself "en panne," as the French say, which means, freely translated, out of business by the roadside. And because his motor had stopped with a cough and a pop in the carburetter he knew only too well that his gesolene tank had not been filled

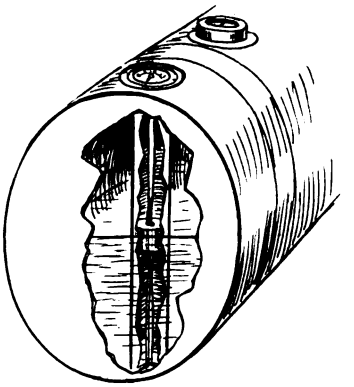


RUDELL AND IMPERIAL

after all; that the garage attendant had overlooked his car in filling the others; that he had to walk back and "take the head off" the man responsible for the oversight.

Of course, he might have lifted his seat cushion, unscrewed the tank cap and taken a slant at his fuel supply before he started —which would have been the logical thing to do. Or he might have emulated some of his brother motorists and poked a stick or a wire or anything else that happened to be handy down into the depths of the tank and judged by its wetness the quantity of the needful in the tank—that is, judged in a kind of a way. But he was in a hurry and he took the word of the garage attendant —and then he walked back. Perhaps he was glad he had only a very little fuel in the tank when he started.

After the owner's wrath had been somewhat appeased and his tank filled up, the garage proprietor would have exhibited a fine sense of the possibilities of his business if he had suggested the advisability of fitting a gasolene gauge to the tank; if he had had a gauge handy so that he could exhibit it to the owner, point out its advantages and make plain that its installation



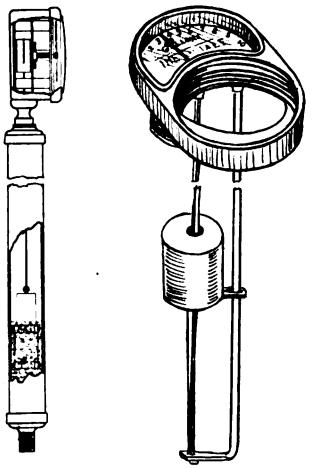
PFAHL INTERNAL GAUGE

would preclude the possibility of a recurrence of the trouble.

What the Garage Man Might Have Done.

He might have pointed out that a device of the kind not only would serve at a glance as a sure and certain tell-tale of the quantity of fuel in the tank, but that it might be so placed that it would be always in front of the driver; that it would inform him of leaks in the gasolene line or the tank and afford him a ready means of ascertaining exactly the quantity of fuel burned every hour the car was under weigh; it would greatly lessen the likelihood of dirt finding its way into the tank, for it would render unnecessary the frequent unscrewing of the tank cap for inspection of the contents and would do away with the unsightly, awkward, antiquated, dangerous measuring stick. But most important of all is that it places before the operator's eyes an actual record of the quantity of fuel in the tank or the quantity that ought to be there.

The garage proprietor might have had any of eight or a dozen different gasolene tank gauges on his shelves—or, better still, in a showcase—ready for just such an emergency. One proprietor of a garage in a good locality housed 20 cars and 19 of them were fitted with gasolene gauges built into place at the factory of the car maker. The 19th car had none. The garage man knew it and he "laid for" the owner, so to speak, by placing in his stock of supplies a gauge that could be fitted to that particular car in a short time and at little expense. Finally, he "got" him and at the same time advanced a couple of pegs in the estimation of the owner, who was convinced that the garage man kept the best interests of his patrons at heart. The owner was mightily pleased with his gauge. The garage pro-



HANS AND TEL-TALE

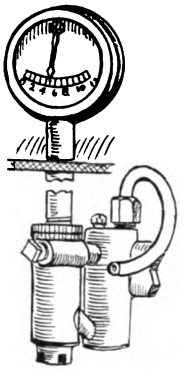
prietor pocketed his just profit—and smiled.

There are a number of different kinds of gasolene tank gauges; some of them are particularly suitable for attachment to some cars and some are more suitable for others; some of them are equally applicable to practically any car; and probably the simplest of them all is the kind that works on the principle of the water gauge glass that forms such a prominent and such a necessary adjunct to steam boilers. It is sure that this type of gauge has less "works" than any other, for, properly speaking, it has no "works" at all.

Two gauges of the kind are illustrated herewith, the Imperial, which is produced by Imperial Fluid Gauge Co., of Canton, O., and the Rudell, which is made by the Rudell Gasoline Indicator Co., of Los An-

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geles, Cal. In principle and in operation, these two gauges are exactly the same, though their construction differs somewhat, as the pictures make plain. In the Imperial, for instance, the graduations are placed behind the glass tube, whereas in the Rudell they are on a tab at the side. Obviously, gauges of the kind must be so mounted that the bottom of the gauge is level with the bottom of the tank, for inasmuch as they operate on the well-known principle that liquids find their own level, their indication would not be correct unless they are so positioned. In applying either, it is merely necessary to tap the gasolene feed line at any convenient place, insert a "T" coupling and connect the gauge, when the fuel will run up the gauge until its level is the same as that of the fuel in the tank. The graduations do not indicate gallons; they indicate

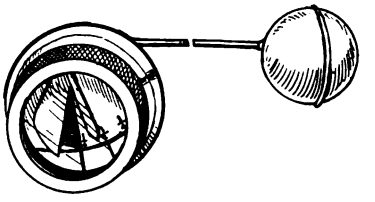


DEPENDO MERCURY GAUGE

inches. It is a simple matter, however, to determine the number of gallons necessary to raise the level in the gauge to any particular inch mark and in this way to check the quantity of fuel in gallons. Such gauges are placed on the dash, of course, and may be any distance away from the tank, though they cannot be used with pressure feed gasolene systems.

Applying the Float Principle.

There are several types of gauges designed to be placed directly in the tank that rely for operation upon a float, and of them the Pfahl gauge, which is manufactured by the Pfahl Gauge & Mfg. Co., of Akron, O., is a good example. Two types of the same gauge are shown in the illustration, one setting flush with the top of the tank and the other having its dial slightly raised. The operating principle of the gauge is very plainly shown by the picture, the float moving up and down in a tube and twisting a flat metal ribbon, to which the needle is attached. As the float is held by a pin entering the slot in the tube so that it cannot rotate on the ribbon, it follows that the ribbon must turn as the float either rises or falls with the level of the fuel in the tank. The gauge, of course, is equally applicable whether gravity or pressure feed is used. In another style made by the same company, the whole tube enclosing the float is mountetd on the dash and connected to

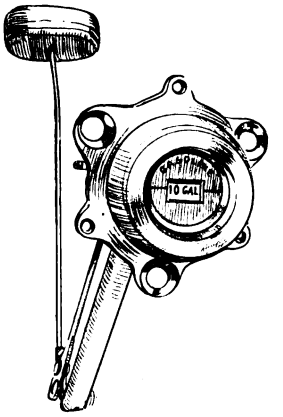


BUSH FLOAT GAUGE

the gasolene tank through piping. In this case, the bottom of the tube must be level with the bottom of the tank, and where pressure feed is used a compensating air pipe from above the float to the top of the gasolene tank must be provided.

Gauge that Replaces Filler Cap.

The Tell-Tale gauge, which is produced by the Bundy-Goebel Mfg. Co., of Detroit, Mich., operates on exactly the same principle as the Pfahl gauge, though it differs from it in several important respects. The first of them is that there is no tube for the float to slide up and down in, its place being taken by a wire to which the float is attached and which prevents it from turning.

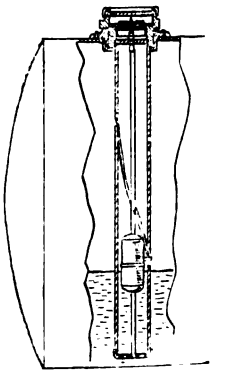


TANNER HUDSON SPECIAL

The second of them is that the gauge requires no fitting whatsoever; it can be installed in practically any tank in about two shakes, the modus operandi being to remove the filler cap and screw the gauge in its place with the float and wire projecting down into the fuel. In the upper portions of the device the dial is made to include a threaded opening for the reception of the filler cap. Obviously, the gauge must fit the tank in two respects: It must have the proper thread to fit the filler cap opening, and the float must reach to the bottom of the tank.

Magnetically Operated Needle.

The Triumph gauge, which is produced by the Boston Auto Gage Co., of Boston, Mass., is another which operates on the same general principle as the Pfahl and the Tell-Tale, though in this case, too, there are a number of distinctive features. The principal point of difference between the Triumph and the others is that there is no positive connection between the float and the dial needle. Another important difference is that instead of being a twisted metal ribbon, the member upon which the float slides up and down with the level of the fuel in the tank turns in bearings both top and bottom, and the float is made to



TRIUMPH MAGNETIC TYPE

turn and carry with it the central rod through a spiral slot cut on the inside of the tube containing the float.

How the Needle is Operated.

The most conspicuous feature of the Triumph gauge is the manner of causing the dial needle to register. At the top of the central rod that is turned by the movement of the float there is a tiny magnet. Directly above it, though in a separate compartment which can be unscrewed and carried away in the pocket, there are the dial and the needle. When the dial is screwed in place, the needle immediately assumes a place directly over the magnet and parallel with it. Hence, it indicates on the dial the depth of the fuel in the tank. The Triumph gauge has a number of advantages, prominent among which is the fact that fracture of the glass over the dial can have no effect in lowering the pressure in the tank in pressure feed systems, for there is no opening between the removable dial portion and the rest of the gauge. The gauge is made in a number of styles and can be mounted in any kind of a tank or in practically any position on the car.

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Though the Hans gauge, which is made by the Hans Motor Equipment Co., of La Crosse, Wis., relies for operation upon the rise and fall of a float resting on the fuel in the tank, the principle is quite different from any of the others, as the accompanying picture makes plain. The gauge may be mounted either directly in the tank with the tube projecting into the fuel, or on the dash. When it is mounted on the dash, the bottom of the tube must be level with the bottom of the fuel tank, of course. The gasolene is led to the float chamber through a small tube which is small enough to ensure a steady flow of fuel regardless of vibration.

Employs Miniature Cable and Drum.

The dial needle is mounted on a spindle which carries a drum over which a fine thread leading to the float is wound. Hence, as the float drops it pulls the needle around, the needle moving in the other direction when the float rises as the tank is filled. In the gauge illustrated the needle is direct connected to the drum, though in another style the needle is moved by a magnet as is the case with the Triumph gauge. The float is so constructed that the larger part is always submerged, the smaller upper part preventing capillary action affecting the accuracy of the readings. The small projections on the submerged portion of the float prevent it sticking to the sides of the tube.

The Bush Mfg. Co., of Hartford, Conn., manufactures a number of different styles of tank gauges, one of which is illustrated herewith. As the picture makes plain, the hand on the dial is moved by a float which is connected to it through the intermediary of a long rod. As the float rises or falls, the dial hand moves with it, registering the height of fuel in the tank. In another style, otherwise exactly like the one illustrated, the dial hand engages and raises a section of the dial when the float drops to the one-quarter-full level, showing a red background as an easily distinguishable warning signal.

Manifestly, it is a comparatively simple matter to calibrate any of the gauges that have been described so that they will indicate the contents of the tank in gallons or quarts or pints, though where gauges are carried in stock to fit tanks of various sizes and shapes it is not possible for the manufacturer to do so; the work then must be done by the purchaser. But where a gauge manufacturer contracts to supply a large number of gauges to a car maker for tanks of a known size, it is quite possible for him to calibrate the gauge to indicate gallons. This is what the Tanner-Hower Co., of Akron, O., does with many of the gauges supplied by it to manufacturers. The gauge that is pictured herewith, for instance, is a special type, designed for attachment (at the factory) to Hudson cars, and shows the contents of the tank in gallons. The gauge is mounted on the dash with the float mechanism in the tank.

Gauge With But Two Moving Parts.

The Dependo tank gauge, which is manufactured by C. F. Roper & Co., of Hopedale, Mass., differs from all of the others in nearly every respect; it is of the kind that attaches to the dash. Without delving deeply into the engineering principles involved in the gauge, it is pointed out by the makers that variations of the height of the gasolene in the tank cause varying pressures on one side of a U-tube partly filled with mercury. A pipe connects one side of this U-tube with the tank, the tube and all the space above the mercury in the U-tube being filled with gasolene and thus excluding all air.

In the other branch of the U-tube there is placed a solid metal float which is connected to the indicating hand by a wire rod. As the pressure on the mercury varies, due to the different heights of the gasolene in the tank, the float moves, moving, in turn, the dial hand which indicates on a suitably graduate scale. An important feature of the gauge is that it is devoid of springs or rods and has only two moving parts.

Wonderful Car Found by a Reporter.

Journalistic enterprise can accomplish stupendous results, on occasion, but it is doubtful if anything has equalled the discovery of a British reporter in the automobile line. Prowling around the recent Paris automobile show, he found a car—no one has seen it since—that he described as having a single cylinder of 60 horsepower. This was nothing, however, for the feature of the machine was that it eliminated, at one fell swoop, all the evils resulting from the emission of the exhaust gases by having a neat and tight-fitting cap over the end of the exhaust pipe.

"Holler" as Solution of Parking Problem.

Alderman Tandler, of Grand Rapids, Mich., is original; he can prove it, and did so when the question of what to do with cars whose owners attend the Powers Theater came up last week. Parking them on Pearl street, a thoroughfare of heavy traffic, was undesirable, and Tandler came to the rescue. He proposes to park them on Ottawa avenue, a block away and around the corner from the theater, and the original part comes in in the means of summoning the cars after the show is ended.

Tandler would have one man in front of the theater with a megaphone and another down at the corner with another megaphone. The first man would holler "Twenty-four," the man at the corner would relay the number to the driver; thus the vehicle would be summoned.

Why Tire Wounds Should be Inspected.

Instructions in the care of tires, cautioning the absolute necessity for the early vulcanization of small cuts and tears, have been drilled in so often that they scarcely require reiteration, though there is one point about the work that as often as not is quite overlooked. Even the tiniest puncture may contain a sharp splinter of metal, or an almost imperceptible particle of sharp gravel that in time will work itself around, even after the hole through which it entered is vulcanized, and make a cavity for itself that eventually will result in a blow-out. Hence, it is quite important that exploration of wounds be made and all such particles of foreign matter extracted before any attempt is made to stop the hole. For the purpose a small, sharp pick, or probe, should be provided, preferably of metal. When a small cut is noticed, its depths should be probed with the pick and every particle of foreign matter removed before the vulcanizer is applied.

Figuring Out Electric Starter Trouble.

A little figuring back from effect to cause sometimes saves trouble. For instance, if the man who had starter trouble, employed fiery language in referring to his battery and shipped the cells to a battery man for overhauling, had reasoned within himself that, as the lights worked beautifully the battery must be about right and that the trouble with the starter must be outside of the battery, he would have been a good deal better off in every way.

Starter Switches that Should be Cleaned.

Most electric starter switches have what is known in electrical parlance as rubbing contacts, but the fact remains nevertheless, that a film of oil may get between the contacts and interfere with the establishment of proper connection. It is wise, therefore, occasionally to examine such switches to make sure that the contact surfaces are bright. If they are dirty or greasy, they may be cleaned with gasolene and touched up with fine emery cloth.

France's Export Trade Still Expanding.

Despite the great stress of competition of the three other large importing automobile exporting nations, France appears to have no trouble in more than holding its own. During the first nine months of the present year, its exports amounted, in round figures, to $34,417,000, as against $31,027,300 during the corresponding period of 1912. During the same period, France's imports increased from $2,0001,000 to $2,996,000.

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1,067,800. Spring-Mounted Vehicle Wheel. Samuel M. Cowan, New York, N. Y., and Edward W. Barnum, Danbury, Conn. Filed Oct. 25, 1911. Serial No. 656,742. (Wheel with coil springs between rim and hub.) 5 claims.

1,067,865. Valve Mechanism for Internal-Combustion Engines. Clarence T. Cleve, San Francisco, Cal. Filed April 24, 1912. Serial No. 692,779. (Rotary cylindrical valve.) 5 claims.

1,067,,996. Device for Heating the Carburetters of Combustion-Engines and More Particularly for Flying-Machine Engines. Robert Esnault-Pelterie, Billancourt, France. Filed Oct. 6, 1910. Serial No. 585,666. (Heating carburetter by circulation of hot lubricating oil.) 6 claims.

1,067,934. Accessory for Automobiles. William E. Martin, St. Paul, Minn., assignor of one-half to Mary E. Hartman, St. Paul, Minn. Filed Oct. 26, 1912. Serial No. 727,927. (Two-wheeled truck as substitute for disabled wheel.) 9 claims.

1,067,940. Device for Extracting Traction-Wheels from Holes. Samuel Rohe, Fostman Rohe, and Louis H. F. Rohe, Kenmare, N. D. Filed Aug. 6, 1912. Serial No. 713,629. (Chain pulling device for rear wheels.) 5 claims.

1,067,949. Resilient Tire. Winfield S. Temple, Sidney, Ill. Filed Sept. 9, 1912. Serial No. 719,390. (Tire with circumferential coiled springs.) 1 claim.

1,067,960. Vehicle Wheel. Marion Milton Bailey, Springfield, Ohio. Filed Oct. 7, 1907. Serial No. 396,232. (Resilient wheel with pneumatic cushion under tire.) 17 claims.

1,067,982. Vehicle Wheel. Chester C. Harbridge, Chicago, Ill., assignor to Detroit Demountable Rim Co., Detroit, Mich., a corporation of Michigan. Filed Jan. 23, 1911. Serial No. 604,109. (Connection for ends of split ring of demountable rim.) 3 claims.

1,068,020. Supplementary Spring for Vehicles. George Sumner, New York, N. Y. Filed Oct. 4, 1912. Serial No. 723,831. (Auxiliary spring shock absorber.) 2 claims.

1,068,022. Liner for Pneumatic Tires. Robert K. Taylor, Detroit, Mich., assignor, by direct and mesne assignments, to Gilbert S. Field, Detroit, Mich. Filed Oct. 29, 1912. Serial No. 728,473. (Tire lining with metal insert.) 1 claim.

1,068,040. Sectional Solid Tire. John Clarence Cole, Chicopee Falls, Mass., assignor to Fisk Rubber Co., Chicopee Falls, Mass., a corporation of Delaware. Filed Sept. 27, 1910. Serial No. 583,988. (Solid tire of annular sections.) 1 claim.

1,068,041. Rim Construction. John Clarence Cole, Chicopee Falls, Mass., assignor to Fisk Rubber Co., Chicopee Falls, Mass., a corporation of Delaware. Filed March 25, 1912. Serial No. 686,004. (Mounting for dual pneumatic tires.) 4 claims.

1,068,044. Vehicle Running Gear. Samuel F. Douglass, Prairie du Rocher, Ill. Filed April 19, 1911. (Four rear driving wheels.) 3 claims.

1,068,056. Combined Air and Oil Valve for Internal Combustion Engines. Clarence Whittington Jackson, Dunkirk, Mont., assignor of one-half to Nels P. Hanson, Dunkirk, Mont. Filed Feb. 27, 1913. Serial No. 751,034. (Crankcase air valve.) 4 claims.

1,068,061. Rim. James S. Johnston, Utica, N. Y. Filed Dec. 6, 1911. Serial No. 664,214. (Demountable rim.) 2 claims.

1,068,071. Endless-Chain Autosled. Julius F. K. Otto, Milwaukee, Wis. Filed Oct. 7, 1912. Serial No. 724,290. (Traction chain drive for motor sled.) 5 claims.

1,068,086. Explosive Engine. Samuel D. Shakley, Pittsburgh, Pa., assignor of one-half to Frank C. Hockett, Cleveland, Ohio. Filed July 17, 1912. Serial No. 709,939. (Four-cycle motor with crankcase compression of mixture.) 6 claims.

1,068,094. Heating Apparatus for Automobiles. Reginald A. Bailey, New Castle, Pa., and Max F. W. Pliske, Cleveland, Ohio. Filed Dec. 24, 1910. Serial No. 599,223. (Heater using exhaust gas.) 1 claim.

1,066,671. Valve Actuating Mechanism for Internal Combustion Engines. Karl Steinbecker, Charlottenburg, Germany, assignor to General Electric Company, a Corporation of New York. Filed Dec. 18, 1911. Serial No. 666.396. (Valve actuated by fluid pressure.) 8 claims.

1,066,672. Internal Combustion Engine. Karl Steinbecker, Charlottenburg, Germany, assignor to General Electric Company, a Corporation of New York. Filed May 25, 1912. Serial No. 699,684. (Oppositely moving pistons in one cylinder.) 10 claims.

1,066,698. Sand Distributing Device for Automobiles. William F. Barcafer, Los Angeles, Cal. Filed Jan. 13, 1913. Serial No. 741, 894. (Pedal-operated sand distributer.) 1 claim.

1,066,712. Cushioning Means for Vehicles. Benson P. Cooper, Ithaca, N. Y., assignor of one-sixteenth to Roscoe C. Wilson and one-sixteenth to Willets Wilson, Ithaca, N. Y. Continuation of application Serial No. 528,414, filed Nov. 16, 1909. This application filed Dec. 8, 1910. Serial No. 596,207. (Pneumatic suspension system.) 11 claims.

1,066,714. Engine Cooling System. Paul Daimler, Cannstatt, Germany, assignor to The Firm of Daimler-Motoren-Gesellschaft, Unterturkeim, Germany. Filed Aug. 30, 1912. Serial No. 717,897. (Cooling system with two radiators.) 3 claims.

1,066,724. Spring Wheel. Friedrich Wm. J. Goersch, Cleveland, Ohio. Filed June 10, 1912. Serial No. 702,834. (Spring cushioned hub.) 10 claims.

1,066,729. Magneto. Edward S. Huff, Detroit, Mich., assignor to Henry Ford, Detroit, Mich. Filed Mar. 2, 1908. Serial No. 418,811. (Flywheel type magneto.) 2 claims.

1,066,738. Shock Absorber. John M. Lansden, Jr., New York, N. Y., assignor, by mesne assignments, to The Aristos Company, a Corporation of Delaware. Filed June 23, 1910. Serial No. 586,437. (Double-arm friction shock absorber.) 2 claims.

1,066,755. Admission Valve. Claude Rorabeck, Dayton, Ohio. Filed Dec. 23, 1912. Serial No. 738,-227. (Valve for fuel injection.) 3 claims.

1,066,756. Air Starter and Relief Valve. Claude Rorabeck, Dayton, Ohio. Filed Dec. 23, 1912. Serial No. 728,228. (Valve for admitting compressed air for starting.) 2 claims.

1,066,763. Attachment for Shock Absorbers. Fred Smith, Stamford, Conn., assignor, by mesne assignments, to The Aristos Company, a Corporation of Delaware. Filed July 27, 1910. Serial No. 574,108. (Shock absorber adjustable bracket arm.) 1 claim.

1,066,768. Internal Combustion Engine. Adolf Vogt, Tulse Hill, county of Surrey, England. Original application filed May 18, 1906, Serial No. 317,-591. Divided and this application filed Oct. 1, 1907. Serial No. 395,451. (Fuel injection type of motor.) 4 claims.

1,066,784. Elastic Tire for Automobiles. Charles W. Barrett, San Jose, Cal. Filed Mar. 4, 1912. Serial No. 681,369. (Tire with inner and outer rims and rubber cushions between.) 1 claim.

1,066,791. Tire. Isaac Broome, Trenton, N. J. Filed July 29, 1912. Serial No. 712,029. (Sectional tire of rubber with steel reinforcements.) 1 claim.

1,066,793. Safety Device for Automobile Engines. Archibald F. Bunting and John Mohn, Detroit, Mich. Filed June 12, 1912. Serial No. 703,129. (Safety throttle.) 7 claims.

1,066,797. Resilient and Suspension Wheel for Vehicles. Herbert Clifford, Jersey City, N. J. Filed Aug. 15, 1912. Serial No. 715,278. (Wheel with inner and outer rims permanently spaced, and rubber blocks in outer rim.) 5 claims.

1,066,808. Vehicle Tire. Julius Gersitz, Downer, N. J., assignor of one-half to Sam Folkman, Philadelphia, Pa. Filed Aug. 9, 1912. Serial No. 714,195. (Wheel with inner and outer rims with enclosed air-tight space bteween.) 3claims.

1,066,861. Tire Protector. Thomas Young Stewart, Winnipeg, Manitoba, Canada, assignor of one-half to James Birrel, Winnipeg, Canada. Filed July 16, 1912. Serial No. 709,630. (Outer shoe.) 3 claims.

1,066,868. Spring Fower Engine Starter. Otto E. Wadewitz, Racine, Wis. Filed May 28, 1912. Serial No. 700,287. (Motor starter of the clock-spring type.) 3 claims.

1,066,887. Gas Engine. Harold D. Chaney, Newton, Mass., assignor of one-half to Louis S. Ross, Newton, Mass. Filed Jan. 27, 1908. Serial No. 412,754. (Arrangement and operation of two-cycle engine ports.) 7 claims.

1,066,919. Vehicle. Theodore A. Klenke, New York, and Frank N. Roerich, Brooklyn, N. Y., assignors, by mesne assignments, to Klenke Cushion Axle Company, a Corporation of New York. Filed Apr. 4, 1908. Serial No. 425,149. (Pneumatic cushions and underhung springs.) 14 claims.

1,066,920. Vehicle Suspension. Theodore A. Klenke, New York, N. Y., and Frank N. Roerich, Jersey City, N. J., assignors to Klenke Cushion Axle Company, a Corporation of New York. Filed Sept. 18, 1911. Serial No. 649,945. (Pneumatic cushions and underhung springs.) 8 claims.

1,066,933. Shock Absorber for Vehicles. Julien Francois Mamet, Billancourt, France. Filed Mar. 27, 1913. Serial No. 753,299. (Auxiliary spring shock absorber.) 4 claims.

1,066,926. Means for Supplying Liquid Fuel to Internal Combustion Engines. James McKechnie, Barrow-in-Furness, England, assignor to Vickers, Limited, Barrow-in-Furness, county of Lancashire, England. Filed Apr. 22, 1912. Serial No. 692,231. (Fuel injection system.) 4 claims.

1,066,953. Vehicle Wheel. Henry G. Sarbach, Cleveland, Ohio. Filed Aug. 7, 1911. Serial No. 642,738. (Wheel with springs between inner and outer rims.) 9 claims.

1,066,954. Self Propelled Vehicle for Transport and Tractive Purposes. Herbert Percy Saunderson, Bedford, England. Filed Nov. 11, 1910. Serial No. 592,882. (Spur gear drive direct to road wheels.) 2 claims.

1,066,958. Equalizing Gearing for Automobiles. Elliott J. Stoddard, Detroit, Mich. Filed May 21, 1912. Serial No. 696,371. (Differential lock automatically actuated.) 5 claims.

1,066,985. Engine Starter. William G. Black and Erastus R. St. John, Pittsburgh, Pa., assignors of one-fourth to said Black, one-fourth to said St. John, one-fourth to W. A. Richwine, and one-fourth to A. H. Sarver, Pittsburgh, Pa. Filed Dec. 29, 1911. Serial No. 668,544. (Compressed air starting system.) 13 claims.

1,067,008. Vehicle Seat. Arthur F. Draper, Berkeley, Cal. Filed May 16, 1910. Serial No. 561,753. (Combined seat and storage compartment.) 2 claims.

1,067,048. Door Lock for Automobiles, etc. Franklin C. Miller, Easton, Pa. Filed Mar. 19, 1912. Serial No. 684,869. (Rotary sleeve lock.) 3 claims.

1,067,078. Power Transmission Mechanism. Clarence W. Taylor, Oak Park, Ill., assignor to Frank M. Lewis, Chicago, Ill. Filed July 17, 1912. Serial No. 710,083. (Roller drive for live rear axle.) 4 claims.

1,067,090. Internal Combustion Engine. Aaron M. Wolf, New York, N. Y. Filed June 13, 1910. Serial No. 566,597. (Rotary valve.) 8 claims.

1,067,130. Shock Absorber. Greene E. Newell, Houston, Tex. Filed Nov. 19, 1912. Serial No. 732,313. (Pneumatic shock absorber.) 1 claim.

1,068,408. Spring Wheel. Dirk H. Brinkman, Sheldon, Iowa. Filed May 7, 1912. Serial No. 695,706. (Concentric-rimmed wheel with outer rim spring cushioned.) 3 claims.

1,068,414. Internal Combustion Engine. Charles R. Courtenay, Watertown, N. Y. Filed Oct. 5, 1911. Serial No. 653,046. (Motor with fuel injection.) 5 claims.

1,068,427. Engine-Starting Apparatus. Edward A. Halbleib, Rochester, N. Y., assignor to North East Electric Company, Rochester, N. Y., a Corporation of New York. Filed Oct. 9, 1911. Serial No. 653,671. (Combined electric and compressed air starting system.) 7claims.

1,068,528. Muffler Cut-Out. Harold C. Peckham, Bristol, R. I., assignor to Auto Improvements Company, Bristol, R. I. Filed Aug. 26, 1912. Serial No. 717,152. (Muffler cut-out with hinged valve.) 1 claim.

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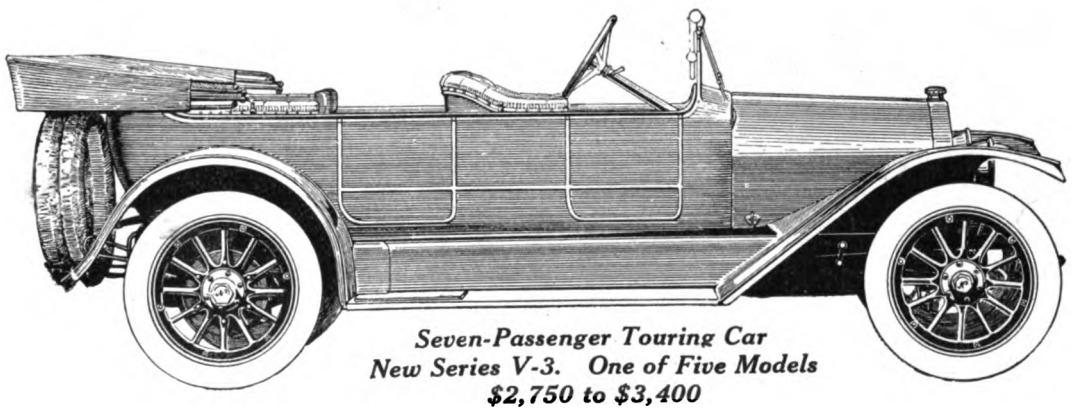
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Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co., Elmira, N. Y.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co. Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co..Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.

B

Bartholomew Co.....Peoria, Ill.
Benton Motor Car Co.....Benton, Ill.
Berg Carriage Co., L.....Dallas City, Ill.
Briggs-Detroiter Co.....Detroit, Mich.
Buckeye Mfg. Co.....Anderson, Ind.

C

Canadian Standard Auto & Tract. Co., Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works....Racine Jct., Wis.
Chadwick Engineering Works. Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
Chevrolet Motor Co.....Flint, Mich.
Colby Motor Car Co.....Mason City, Ia.
F. Coleman Carriage & Harness Co., Ilion, N. Y.
Commerce Motor Truck Co...Detroit, Mich.
Corbitt Automobile Co....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, O.
Crow Motor Car Co.....Elkhart, Ind.
Jas. Cunningham Son & Co..Rochester, N. Y.

D

Geo. W. Davis Carriage Co...Richmond, Ind.
De Dion Bouton.....New York City
Dorris Motor Car Co.....St. Louis, Mo.

E

Elkhart Carriage & Harness Co. Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, O.

F

F. A. L. Motor Car Co.....Chicago, Ill.
F. I. A. T. Company...Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.

G

Gramm-Bernstein Co.....Lima, O.
Gramm Motor Truck Co.....Lima, O.
Gramm Motor Truck Co...Walkerville, Ont.

H

Havers Motor Car Co....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co..Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Howard Motor Car Co....Connersville, Ind.
Hupp Motor Car Co.....Detroit, Mich.

I

Imperial Automobile Co.....Jackson, Mich.

J

Jackson Motor Car Co.....Jackson, Mich.

K

Kelly-Springfield Motor Truck Co., Springfield, O.
King Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Krit Motor Car Co.....Detroit, Mich.

L

Lancia Co.....Turin, Italy
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co...Connersville, Ind.
Locomobile Company of America., Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.

M

W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co....Oshawa, Ont
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd. St. John, N. B.
Martin Carriage Works.....York, Pa.
Martindale & Millikan.....Franklin, Ind.
Mason Motor Car Co.....Waterloo, Ia.
Maxwell Motor Car Co.....Dayton, O.
Mercer Automobile Co.....Trenton, N. J.
Meteor Motor Car Co.....Shelbyville, Ind.
The Metz Company.....Waltham, Mass.
Metzger Motor Car Co.....Detroit, Mich.
Mitchell-Lewis Motor Car Co...Racine, Wis.
Moline Automobile Co.....East Moline, Ill.
Motor Car Mfg. Co.....Indianapolis, Ind.

N

Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co. Indianapolis, Ind.
Nordyke & Marmon Co....Indianapolis, Ind.
Norwalk Motor Car Co. Martinsburg, W. Va.
Nova Scotia Carriage Co....Kentville, N. S.
Nyberg Automobile Works...Anderson, Ind.

P

Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co...Detroit, Mich.
Palmer & Singer Mfg. Co., Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, O.
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.

R

Regal Motor Car Co.....Detroit, Mich.
Renault-Freres Selling Co....New York City
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada, St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.

S

Sayers & Scoville Co.....Cincinnati, O.
Seagrave Co.....Columbus, O.
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co. New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works, South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, O.
Stafford Motor Car Co.....Kansas City, Mo.
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, O.
Stegeman Motor Car Co....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell)..Dayton, O.
Studebaker Corporation.....Detroit, Mich.
Stutz Motor Car Co.....Indianapolis, Ind.

U

U. S. Carriage Co.....Columbus, O.

V

Vandewater & Company....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.

W

Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
Wichita Falls Motor Co..Wichita Falls, Tex.
Willys-Overland Co.....Toledo, O.
Winton Motor Car Co.....Cleveland, O.

Z

Zimmerman Mfg. Co.....Auburn, Ind.

5 FACTORY OWNED BRANCHES
AND
150 REAL SERVICE STATIONS

established to render assistance and minister to the comfort of LBA users.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch: 136 W. 52nd St.
Detroit Branch: 1191 Woodward Ave.
San Francisco Branch: 243 Monadnock Bldg.
Chicago Branch: 2241 Michigan Ave.
Indianapolis Branch: 438 and 439 Indiana Pythian Bldg.

Depots in all Principal Cities in the United States, Canada and Mexico (77)

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Give your automobile a firm and sure roadway.

Know that you can turn the corner when you reach it; *know* that you can dodge vehicles and street cars; *know* that you can stop when you want to and where you *have* to. Begin, if you like by equipping the rear wheels of your car with

Goodrich Safety Tread Tires

Best in the Long Run—Best in the Short Stop

The tread that makes the brake effective

The thick, tough rubber fingers of the Goodrich Safety Tread wipe away the mud, ooze and slush. They clean and grip the roadway. They make you *know* that *you* are in control. The extra thickness of heavy Goodrich rubber in the treads means longer wear and low cost mileage all the time.

The following are the prices on the best and most practical anti-skid tires made. *You should never pay more.* Your dealer will gladly sell you the famous Goodrich Safety Tread Tires at these prices:

28 x 3 ....$11.85	33 x 4....$25.25	36 x 4 ....$27.75	37 x 4½....$38.15
30 x 3 .... 12.65	34 x 4.... 26.05	35 x 4½.... 36.05	36 x 5 .... 43.15
30 x 3½.... 17.00	35 x 4.... 26.90	36 x 4½.... 37.10	37 x 5 .... 44.45
32 x 3½.... 18.10			38 x 5½.... 57.30

Branches in All Principal Cities

The B. F. Goodrich Company

Factories: AKRON, OHIO

There is nothing in Goodrich Advertising that isn't in Goodrich Goods

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"American" Axles

Their Presence in a Car is an Indication of Highest Class Construction Throughout

YOU can judge absolutely the character of any motor car—its efficiency and reliability—by a careful analysis of its rear axle.

The car that is built to sell "at a price," must necessarily use an axle that is limited by that price both as to materials and workmanship.

Yet the one thing about a motor car that should not be limited in quality—in real value—is its rear axle.

If your car has "American" Axles its manufacturer has recognized this fact, and has put quality above price in this vital feature of car construction.

"American" Axles are made to fill the need that exists for an axle of unquestioned value, judged either by its design, materials or workmanship.

Their distinctive features are not to be found in any other axle because they are protected by our own comprehensive, basic patents.

The superiority of their design and the excellence of our manufacturing processes reduce friction to the minimum, and give the maximum of mileage.

In "American" Axles only can you have the option of the highest class of Bevel or Worm Gears. Both are fitted throughout by us with the best types of foreign made ball bearings.

The adjusting and full floating features of "American" Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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The Plug that Plugs

MASTER



All Spark Plugs of Our Manufacture Are Licensed Under the Canfield Patent and Have Been Since January 8, 1912.

Come and See Them At the New York Show

Booth No. D-81

The "MASTER" spark plug which we are now introducing will do all that any other plug can do and more.

The materials throughout have been selected solely for efficiency in their respective functions regardless of cost.

The extremely heavy porcelain core is of a special nature and will stand tests which easily break down ordinary insulators.

Over 1500 have been on trial ***since last March*** in manufacturer's test cars, motor trucks, etc., ***without one failure reported to date.***

"MASTER" spark plugs will be highly appreciated by discriminating buyers who realize the economy of buying the best rather than the cheapest.

Price, $1.00 ***Quantity Prices on Application***

Hartford Machine Screw Co.

HARTFORD, CONN.

Detroit Office and Warehouse:
878 Woodward Ave.

New York Office and Warehouse:
Cor. Broome and Lafayette Sts.

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Hupmobile











Dealers Know No Closed Season

Hupmobile sales in October were the largest of any October in Hupp History.

Hupmobile sales in November were the largest of any November in Hupp History.

Hupmobile sales in December (mind you, December) promise to be the largest of any December in Hupp history—and the largest of any month in the last six.

Hupmobile values have won such firm conviction in the minds and hearts of American families that the volume of our business, month by month, has become as steady as that of any other staple product.

Hupmobile sales, season in and season out, go forward with the momentum of popular affection and the irresistible force of a national institution such as the Hupp Motor Car Company has grown to be.

A Force of Substantial Business Men

The reputation, the popular affection, the solidity, the steady sales of the Hupmobile have been built on an organization of progressive and successful dealers.

There are some fifteen hundred of these—all men of standing and permanence in their respective communities. The views at the left show typical Hupmobile sales rooms and service stations.

These men are as they are—

First: Because the Hupp Motor Car Company has always believed that the character of the Hupmobile must be reflected by the character of the men who represent it.

Second: Because these men have prospered—precisely as the Hupmobile has grown and prospered.

The success of the Hupmobile has been the success of a loyal commercial family—flourishing members in every state in the Union and virtually in every country on the globe.

We believe that these fifteen hundred dealers enjoy a close intimacy, a mutual confidence, a reciprocal benefit and abiding harmony seldom to be found in any sales organization.

It is gratifying to be named—as we recently were—by competent authority as one of the six big successes of the year.

But it is even more gratifying to acknowledge the part that our fifteen hundred dealers have had in the building of this achievement.

Hupp Motor Car Company

1254 Milwaukee Ave., Detroit, Mich.

The car of The American Family

Digitized by Google

THE NEW AUTO STAR

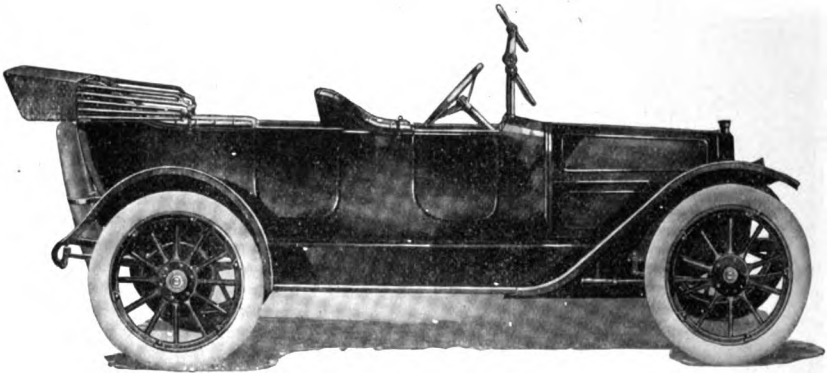


Northway's Motor Car

After years of experience, exhaustive tests and expensive experiments, the greatest of all designers and inventors, Mr. R. E. Northway, the founder of the Northway Motor Co. and original designer of that now famous motor, which is acknowledged by the best engineers and experts to be the greatest motor in the world, now brings out his latest and greatest of all motors, to be used exclusively by the Crescent Motor Co. of Cincinnati, O.

14 Features that Make OHIO An Ideal Automobile

Northway's Latest and Greatest Crowning Glory



ROYAL MODEL, $1,985

MOTOR—Six-cylinder, 4 x 6.
AXLE—Full floating on annular bearings.
TRANSMISSION—Four speeds ahead and one reverse.
CLUTCH—Multiple disc.
CONTROL—Center and left hand drive.
SPEEDOMETER—Warner, flush.
TIRES—35 x 4½ and 36 x 4.
WHEEL BASE—132 inches.
ELECTRIC STARTER, LIGHTS and HORN.
RIMS—Demountable.

OHIO MODEL, $1,275

MOTOR—Four-cycle, 4¼ x 4¾.
AXLE—Floating on roller bearings.
TRANSMISSION—Three speeds ahead and reverse.
CLUTCH—Multiple disc.
CONTROL—Center.
SPEEDOMETER—Stewart.
TIRES—34 x 4.
WHEEL BASE—116 inches.
ELECTRIC STARTER, LIGHTS and HORN.
RIMS—Demountable.

We are now ready to contract with good, reliable, live wide-awake dealers and distributors on this greatest of all lines.

Address All Sales Correspondence to
C. D. PAXSON, Gen. Sales Mgr.
1900 Euclid Ave, Cleveland, Ohio

EXPORT
BELLAMORE & TOOMEY
10 Bridge St., New York City

FACTORY
THE CRESCENT MOTOR CO.
W. T. Hunter, Pres., Cincinnati, O.

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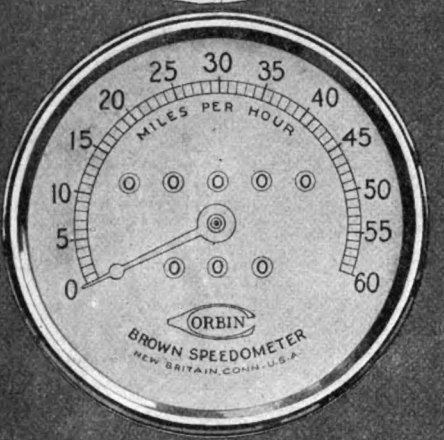
Built with the Precision of a High Grade Watch

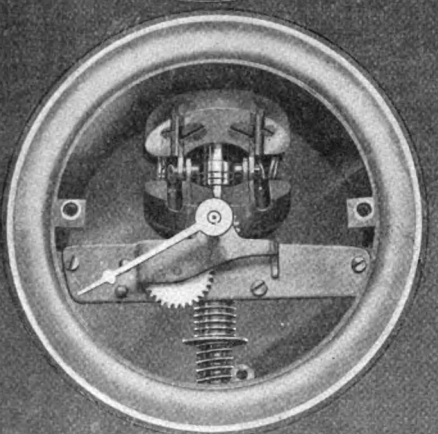
CORBIN-BROWN

SPEEDOMETER

"The Speedometer of Absolute Accuracy"







Sold by Leading Dealers Everywhere. Write for Catalog.

THE CORBIN SCREW CORPORATION

THE AMERICAN HARDWARE CORPORATION, Successors

NEW BRITAIN, CONN.

Branches: New York Chicago Philadelphia

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Springfield Metal Bodies

Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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THE SURVIVAL OF THE FITTEST

Never, since the beginning of the automobile industry has there been such a determined insistence on genuine motor car value as there is at the present time.

Olds Motor Works has built into the Oldsmobile, since the very first model, a quality which has always been recognized as the utmost in automobile practice and engineering.

The 1914 Oldsmobile is the development of this foresight and sound policy, and now stands—the greatest of all sixes.

Throughout the entire automobile manufacturing field are makers who are exploiting sixes, but the public is now educated to appreciate quality and reputation in a motor car, just as in any other commodity, and the inevitable has happened—the demand has settled upon a six-cylinder motor car with reputation, experience and stability behind it. The day of the makeshift is over.

The popularity of the Oldsmobile this year is a natural outgrowth of this insistent desire for quality. The Oldsmobile was a pioneer in the six-cylinder field, and during the past decade has witnessed the passing of many newcomers. Now that the time has arrived when motor car purchases are made on merit alone, it has been fittingly and deservedly acclaimed "the greatest six-cylinder car ever produced."

A Few Words to Dealers

You are probably familiar enough with prevailing conditions to recognize the truth of the above statement. We believe it would be to your advantage and profit to sell a car with the reputation, stability and quality of the Oldsmobile—at a price astonishingly near to that of cheaper makes, and considerably lower than that of any other car in its class.

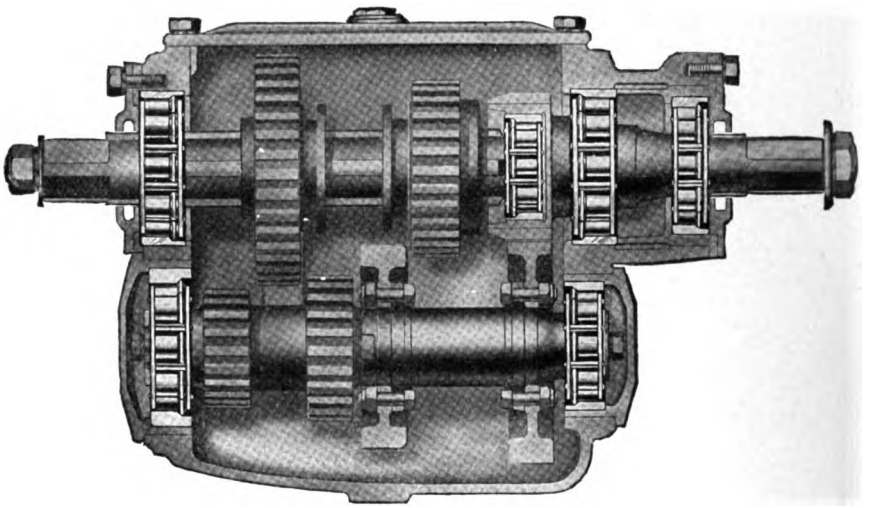
We have some territory open which we can allot to responsible dealers. Are you prepared to take advantage of this opportunity?

Combination 4 or 5-Passenger Phaeton, Touring Body Type, $2975
Seven-Passenger Touring Body, $175 Extra :: Limousine, $4300

OLDS MOTOR WORKS, LANSING, MICH.

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"BOWER SAVES POWER"



Transmitting All the Power

The requirements of a satisfactory transmission gear are few but important. It must operate without noise. It must not need adjusting. It must have long life. The experience of many prominent manufacturers of motor cars has demonstrated that Bower Roller Bearings squarely meet these requirements.

Besides, "Bower Saves Power"

BOWER ROLLER BEARING COMPANY
DETROIT, MICHIGAN

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The Business Getter

"It Hangs Everywhere"



WELCOME and depended upon in every office where a *sales chance* exists. It is there all the time and will introduce you and your goods to the buyer *at the right time* and *in the right place.*

Good space all the year round can be had for a nominal sum which pays all the expense of reaching every active buyer of your product—the purchasing agents and engineers of every pleasure and commercial motor car manufacturer, also the dealers, garages, repair shops and supply houses throughout the United States, Canada and Mexico.

Economical Advertising that Pays

THE AUTOMOBILE TRADE DIRECTORY

243-249 West 39th Street NEW YORK

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THE ATTERBURY LINE

Selected by the War Department Purely On Merit

The final test made under supervision of the inspector for the War Department—pronounced PERFECT.

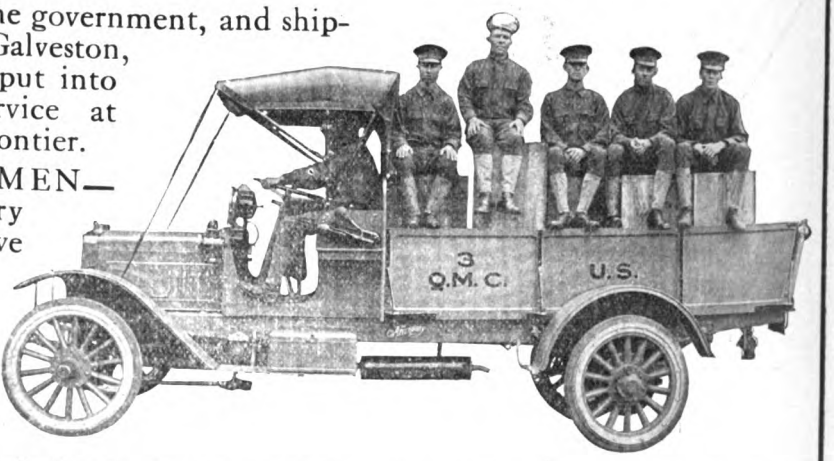
IT DEMONSTRATED

Quickness of Action
Ease in Handling
Freedom from Heating
Quietness in Operation
Power for Steepest Grades
Economy in Fuel Consumption

Distance Traveled 103 Miles, Time, 7 1-2 Hours

Accepted for the government, and shipped at once to Galveston, Texas, to be put into immediate service at the Mexican frontier.

BUSINESS MEN—The Atterbury Truck will prove a great asset in bringing to *you bigger business.*



To the dealer who looks ahead—to the dealer who sees that one satisfactory sale made NOW means more sales in the future—to such a dealer we offer a splendid agency proposition.

ATTERBURY MOTOR CAR COMPANY

Black Rock, Dept. "M.W.," Buffalo, N. Y.

Digitized by Google

A WORD ABOUT OURSELVES

Occasionally a friend asks us:

"With a starter and a dynamo so unique and efficient as yours, why are you in the field so late? Why are so few car makers ready to have you announce the adoption of Rushmore equipment on their cars? Why did you let a score of competitors get the start of you?"

And we reply with another question.

"Did you ever hear of a really worth-while book being written by a man who said to himself, 'Go to, now, let us write something and visit Europe on the proceeds'?"

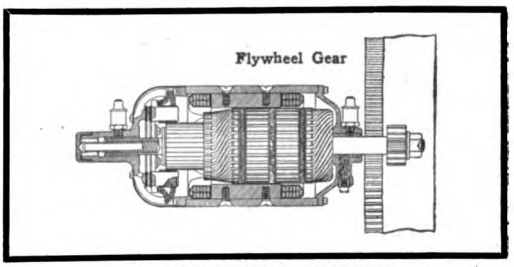
Can you mention a single motor car device of enduring merit that was put together in haste to reap a quick harvest? If we had committed ourselves three years ago to a half-baked design, isn't it likely that we would presently be fighting for our life in competition with some real engineer who preferred to wait till his system was right?

We preferred to do the waiting and developing ourselves. We had faith in the future of electric starting and electric lighting; we did not wish to see them wounded by the haste of false friends. Until we could produce a system whose every user would pronounce electric starting and lighting the perfect method, we were willing to work in silence.

The principle of action which we first showed a year ago in the Model A Starter was fundamentally right. Improvements since then have been in the direction of increasing the power developed per pound of metal. The Model B, and now the Model C, all operate automatically, meshing and unmeshing at the right instant without guidance by the operator. So efficient is the Model C that, though weighing but 30 lbs., it does more than most starters of double its weight, and more per ampere of current than any other starter made. At length we are satisfied!

"A stern chase is a long chase," but our voluntary delay gave to the world a system of which we are proud to the last screw. Every one of our customers has come to us against the keenest competing salesmanship, and solely on the demonstrated superiority of the Rushmore System. Most of them formerly used electric systems of other types.

We have no regrets for our conservatism. Not one of our 1913 customers has left us. Several additional concerns whom we will shortly be free to name will join our list for 1914. We are content with a measure of success that already promises sensational developments when the Rushmore System becomes known to the public through its performance on Rushmore-equipped cars.



THE RUSHMORE STARTER

Cars now equipped with Rushmore Starting and Lighting System:

SIMPLEX KNOX ALCO REGAL
LANCIA MERCER CRANE KLINE

Also regular equipment in America on

MERCEDES DeDION-BOUTON ISOTTA FRASCHINI AUSTRIAN DAIMLER

WATCH THE LIST GROW!

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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Large sums of money have been expended by automobile and parts manufacturers in producing "noiseless" cars, with particular attention paid to Motors, Gears, Rear Axles, Universal Joints, Clutches, Brakes, etc.

But many producers—not all—have apparently forgotten that looseness is most prone to develop in bolted-up construction.

This loosenoss can be obviated by using spring lock washers of pre-determinod efficiency. There is no guesswork in the foregoing statement. Challenge us to prove it.

Bearing in mind that a rattling bolt or a squeaking fender is even more annoying to the ear than the grind of a gear, you will be rather eager to get to the real crux of the Nut Lock Washer situation.

And that means that you will read a new and important significance into the three essential points of an efficient Nut Lock Washer, viz., PROPER SECTION, PROPER ANALYSIS, PROPER HEAT TREATMENT.

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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Greatest Knight Motor

$2400 MOLINE-KNIGHT $2400

Nothing extra to pay — *Completely Equipped*

The car you have long wanted

More Power—More Flexibility—More Economy—More Silence

Guaranteed fifty brake horsepower The car of the future is here today—a guaranteed fifty brake horsepower "Four" as powerful and as flexible as any "Six"—a big, roomy five-passenger car, ironed for two auxiliary seats, with an electric starter that starts each and every time. The Moline-Knight will be a delightful surprise, with its perfect, graceful, smooth streamline body and foreign air. Moline upholstering quality has been embodied throughout.

The car of the future will not have poppet valves The old poppet valve has outlived its usefulness because high compression, large valves, strong springs and precipitous cams are necessary in the poppet valve engine to get great power and high speed. Here is a weakness the poppet valve will never be able to overcome. In the Moline-Knight there are no valves to clog or grind—no cams, no springs, no timing gears to get out of order.

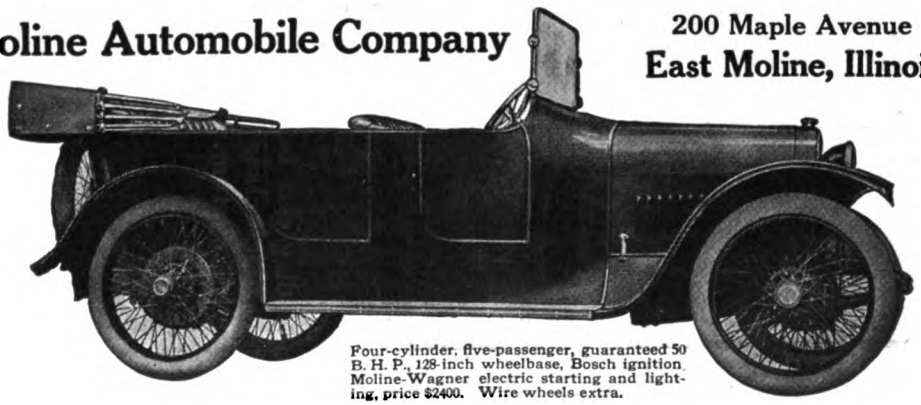
Everything you have desired Full floating rear axle, 128-inch wheelbase, selective transmission, half eliptic rear springs of unusual length, Truffault-Hartford shock absorbers, Bosch ignition, Schebler carburetor, Moline-Wagner electric starting and lighting, adjustable foot pedals, center control, left side drive, lubrication by force through hollow shaft, 36x4 1-2 artillery or wire wheels, Firestone demountable rims, 18-gallon gasoline tank in rear, finished in blue-black, other colors optional with three weeks notice. One-man Mohair top, cover and side curtains, automatic wind shield, electric horn, power tire pump, Warner 60-mile speedometer, Goodrich Unit Molded Tires, gasoline and oil gauge and speedometer, foot rail, robe rail, tire irons, complete set of tools, jack, tire repair kit, eight-day clock.

At least investigate — write today for our Advance Information Folder—learn the truth about motors.

Dealers if you can show us you are entitled to a Moline-Knight contract, write or wire us at once.

Moline Automobile Company

200 Maple Avenue
East Moline, Illinois

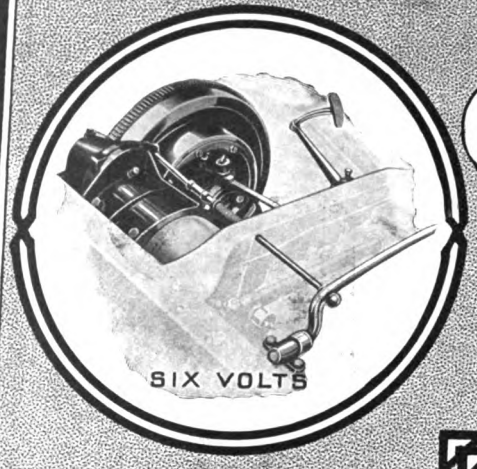


Four-cylinder, five-passenger, guaranteed 50 B. H. P., 128-inch wheelbase, Bosch ignition, Moline-Wagner electric starting and lighting, price $2400. Wire wheels extra.

The "Four" that makes the "Six" unnecessary

MOLINE KNIGHT

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GRAY & DAVIS
STARTING-LIGHTING SYSTEM

The leading cars in every price-class carry this system.

In these days, the starting-lighting system helps to sell the car or — otherwise. Depending on the quality of the system.

THIS was the first 6-volt starting-lighting system. The fact that 6 volts is now considered as standard, shows that the Gray & Davis system was designed correctly at the very beginning.

¶ Consider that the moderate-priced car at $1075 as well as its big, powerful brother at $7000 carry the Gray & Davis system. There is no class distinction when it comes to insuring starting-lighting efficiency.

¶ If you can assure a prospective purchaser that Gray & Davis stand back of the starting-lighting equipment you have a pretty forceful argument which is well worth using.

The Gray & Davis

Digitized by Google

The Gray & Davis system is delivered on time in accordance with specifications.

62 Service Stations render assistance and advice to Gray & Davis users.

A national advertising campaign has standardized this equipment.

1914 will be another Gray & Davis year.

¶ In England, France and Germany, they are equipping with this system—not because of price but for the reason that the Gray & Davis starting motor and dynamo is of the quality that appeals to engineers and motoring public, irrespective of where it is built.

¶ The name "Gray & Davis" is a guarantee that has been recognized throughout the industry during the past fifteen years. We consider it our duty to see that equipment bearing this name gives service and satisfaction.

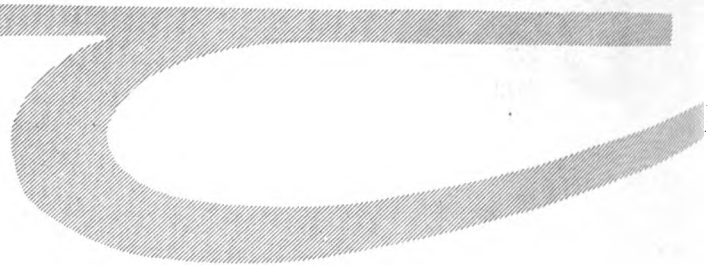
¶ When the prospective purchaser says: "What starter?" and the answer is "Gray & Davis," you do not have to explain the merits of this system nor sell it, as well as the car, because practically everyone interested in motoring knows this system and what it will do.

GRAY & DAVIS, Inc.

Boston, Mass.

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FORMS CLOSE



The "BEFORE MOTOR

P U B L I S H E D

Wire or telephone your order for space, collect—then mail your copy and cuts to us special delivery. Call on us for help if it will save time.

Space at your regular rates—Advertising value unequalled.

ONLY TWO

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DEC. 13th

SHOWS" Issue

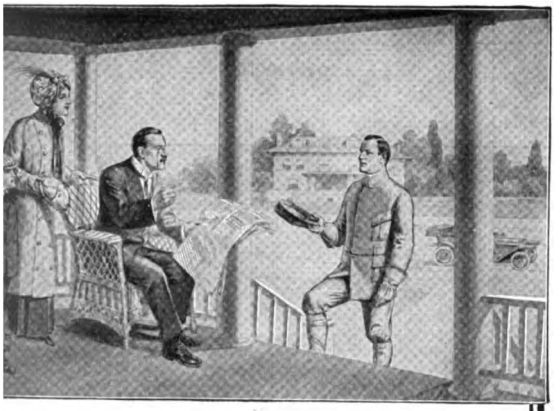
WORLD

DECEMBER 18th

Don't miss this issue. It's the one best opportunity to nail the Trade's interest fast to your goods —just before the Shows, when what they will see is what they want to know about. Anything to save time– use telegraph or telephone at our expense, only **Don't Miss It.**

DAYS LEFT

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Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to *prevent* accidents.

"I can't afford to take *any chances.* We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of *Weed Chains* and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—*Life Insurance* and *Accident Insurance Companies* strongly endorse them and recommend their use. *Taxicab Companies,* for their own protection, *insist* that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the *most profitable* Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

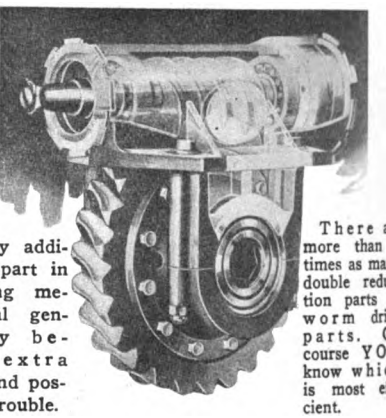
Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

THE NAME WEED ON EVERY HOOK WEED

You build Silence, Neatness, Simplicity and Efficiency into your vehicles when you equip them with the

SHELDON WORM DRIVE



Every additional part in **anything** mechanical **generally** betokens extra **wear** and possibly trouble.

There are more than 3 times as many double reduction parts as worm drive parts. Of course YOU know which is most efficient.

A CHAIN is no stronger than its weakest link. Every nut, cotter, washer, head pin casting, forging, chain link and rivet is a necessary unit of the assembly it composes. The failure of one of those units may mean the wreck of your truck, and perhaps the damage of property and the loss of life.

Only one-third the number of parts required for a Worm Drive that are required for a two-step reduction of the chain driven type. This is convincing proof that, all things being equal, the single reduction Worm Drive has a three-to-one chance of giving better service than a two-step reduction with three times as many parts.

But all things are not equal. The Worm Drive is a single reduction, transmitting the power direct from the motor to the rear wheels. It is the only drive in which it is possible to secure this result.

The Worm Drive conserves power because it is a single reduction. Every moving power transmitting unit works in oil, reducing friction to a minimum.

Sheldon Worm Drive is non-adjustable. The Worm carrier is machined exactly true by specially constructed machines.

If the carrier is not true, the Worm can not be assembled. Once assembled the Worm and Worm Wheel can be removed and replaced without disturbing their alignment. No adjustment to tamper with.

It is not necessary to provide adjustment for wear. The slight wear of the imported Worm and Worm Wheel only adds to its efficiency.

Of course, the Worm and Worm Wheel wear out, but not during the life of one truck. The experience of the largest user of Worm Drives has proven this.

Sheldon Axle Company

Wilkes-Barre, Pa.

CHICAGO.....68 E. 12th Street
SAN FRANCISCO..444 Market Street
DETROIT....1215 Woodward Avenue

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American made for American trade

NEW DEPARTURE

Guaranteed

BALL BEARINGS

To facilitate supplying demand for garages, dealers and owners, for New Departure ball bearings, the following distribution agencies are announced, where stock of these bearings is carried.

Ahlberg Bearing Co.....93 Massachusetts Ave., Boston, Mass.
Pruyn & Bilodeau.....1550 River St., Hyde Park, Boston, Mass.
Ahlberg Bearing Co.....1790 Broadway, New York City
Jos. C. Gorey & Co.....352 W. 50th St., New York City
The Gwilliam Co.....Broadway and 58th St., New York City
Pruyn & Bilodeau..1876 Broadway, Cor. W. 62nd St., New York City
Albany Hdwe. & Iron Co.....Albany, N. Y.
Syracuse Rubber Co.....212 S. Clinton St., Syracuse, N. Y.
Iroquois Rubber Co.....279-283 Washington St., Buffalo, N. Y.
Rochester Rubber Co.....24 Exchange St., Rochester, N. Y.
The Gwilliam Co.....1314 Arch St., Philadelphia, Pa.
Bumiller-Remelin Co.....432 Main St., Cincinnati, Ohio
Cray Bros.....1111 West 11th St., Cleveland, Ohio
Hearsey-Willis Co.....Indianapolis, Ind.
Machinists Supply Co.....Pittsburgh, Pa.
Ahlberg Bearing Co.....2637 Michigan Ave., Chicago, Ill.
Chicago Pulley & Shafting Co.....32-36 S. Clinton St., Chicago, Ill.
Herring Motor Supply Co.....912-14 Locust St., Des Moines, Iowa
Faeth Iron Co.....1125-31 West Eighth St., Kansas City, Mo.
Pence Automobile Co.....800 Hennepin Ave., Minneapolis, Minn.
Fred Campbell.....1109 Locust St., St. Louis, Mo.
Elyea-Austell Co.....Atlanta, Ga.
The Lininger Implement Co.....Sixth and Pacific Sts., Omaha, Neb.
Denver Auto Goods Co.....1600 Broadway, Denver, Colo.
Fry & McGill.....16th and Broadway, Denver, Colo.
M. L. Foss.....1729 California St., Denver, Colo.
Bertram Motor Supply Co....251 South State St., Salt Lake City, Utah
J. W. Leavitt & Co.....301 Golden Gate Ave., San Francisco, Cal.
Irvin Silverberg & Co.....541 Van Ness Ave., San Francisco, Cal.
Kimball-Upson Co....609-11 K St.; 608-15 Oak Ave., Sacramento, Cal.
Western Rubber & Supply Co.....1011 S. Olive St., Los Angeles, Cal.
Western Rubber & Supply Co., 66 South Fairoaks Ave., Pasadena, Cal.
Western Rubber & Supply Co.....1364 Fifth St., San Diego, Cal.
Ballou & Wright.....Seventh and Oak Sts., Portland, Ore.
Ballou & Wright.....817 E. Pike St., Seattle, Wash.
Child, Day & Churchill Co.....1215 First Ave., Spokane, Wash.
Automobile Supply Co.....Tacoma, Wash.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit



"WHITNEY" KEYS

for

"The Woodruff System of Keying"

"Whitney" Keys are packed in boxes containing 100 assorted sizes, selected especially for the benefit of the repair trade.

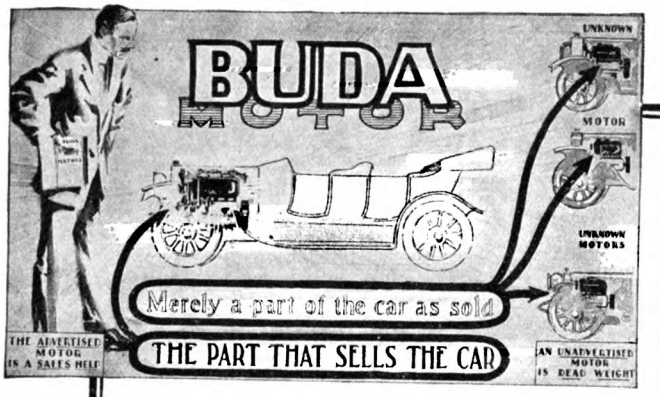
Every garage and repair man should have a box of these assorted keys on hand. They cost little and are very convenient. They may be purchased from the leading jobbers of automobile supplies or we can supply same promptly from the factory.

THE WHITNEY MFG. CO.

Manufacturers of

High Grade Driving Chains. Keys and Cutters for the Woodruff System of Keying Hand-Feed Milling Machines

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To Move the Car,

quietly, easily, rapidly to *move the car;* on boulevards, in the mud and sand, up the hills *to move the car,*— that's the thing the BUDA Motor does, when new, when old. It is therefore not surprising, but quite the natural thing, that

To Move the Car from the Sales Floor

it should have a

BUDA MOTOR

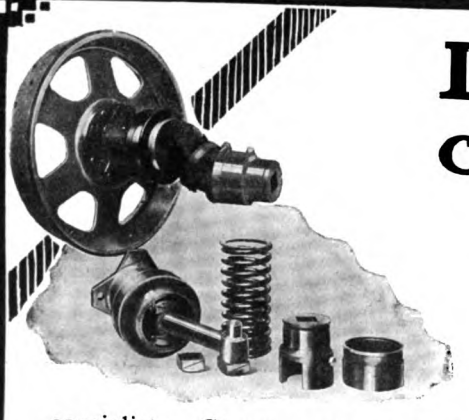
It is also quite natural that people call the BUDA Motor

"The Part That Sells the Car"

THE BUDA COMPANY

Factory, Harvey, Ill. (Chicago Suburb). Address all communications to our FACTORY REPRESENTATIVES

1108 So. Michigan Ave., Chicago — **BRANDENBURG & COMPANY** 57th & Broadway, New York, N. Y. — Ford Building, Detroit



Let us solve your clutch problems

It pays to know that the CLUTCH — the most frequent point of contact between driver and car — is absolutely right. No guesses. No "ifs."

We are CLUTCH specialists. Give us a chance to figure on your CLUTCH problems. We invite you to get in touch with us now—

True, you may not be ready to place your order—

But now is the time to "make assurance doubly sure" by writing us fully in regard to your requirements. Concerns who appreciate the better quality of workmanship will find that KONIGSLOW gives a CLUTCH and a SERVICE worth tieing up to. Write.

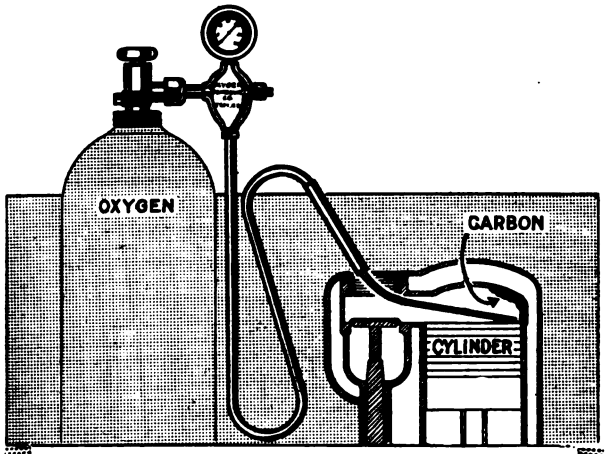
Clutches
Clutch Rocker Shafts
Control Levers
Universal Joints

KONIGSLOW CLEVELAND

The Otto Konigslow Mfg. Company
CLEVELAND

Detroit Office: J. H. GOULD
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Invest Ten Dollars and Make One Hundred

Ten dollars will buy a **Perfect Carbon Remover.** With it, **all** carbon deposits can be **completely** and **thoroughly** removed from the cylinders. Averages about fifteen minutes per cylinder. Does away with many engine troubles. Makes satisfied customers — and **big profits.** Can pay for itself **in first few days**—after that, **all profit!**

One of best known money-makers for garages. Helps motor truck and large private owners keep up efficiency of cars at low cost.

Usual Price is $15

But our Price is NOW $10 (without oxygen tank). We sell for cash only and do not carry accounts. Therefore, we take **1-3 off** the regular price and give our customers the benefit of this additional $5.00 from every one we sell. Every outfit is positively guaranteed—we stand back of every one of them. It does not waste oxygen; gauge always shows exact pressure. No unnecessary parts—but every part as complete and perfect as any other outfit made.

Express companies are instructed to allow purchaser to open package before accepting it —therefore you take absolutely no chances.

Price only $10.00. Express prepaid.
Sent, cash with order—or C. O. D.

Oxygen Decarbonizer Company
301 River Street Troy, N. Y.

Send for information

$10

Do Your Own Welding!

Save Time and Money on Repair Jobs!

Every garage and every owner of taxicabs and motor trucks has an ***actual and frequent need*** for a good, simple welding outfit. Don't send out such repair work. You can now ***do it yourself***---and save a lot of time for your customers and money for yourself!

Don't buy and wait for new parts! You can ***make old parts as good as new*** by using the

Cox Welding Outfit

For Welding and Carbon Removing

Complete in every detail. Will do every possible welding job. Unlike others, it is ***very simple in construction.*** Any average mechanic can become adept in its use in a short time. We furnish complete instructions with each outfit. Can be used on parts of iron, steel, brass, bronze and aluminum. It is ***safe*** and ***sure.***

Every job you do means

Extra Profit for YOU

The outfit will pay for itself many times over. It means quick repair work—and ***all of it done in your shop!***

The Cox Outfit is not only excellent for welding, but it can also be used to

Quickly and Completely Remove Carbon from Cylinders

Thus you have a dual outfit—a profit maker in two ways! Its use is doubled. It saves time in two ways—and produces two profits! Its possession indicates progressiveness—up-to-date in shop equipment.

Send for free Catalog and full information—NOW.

Cox Brass Mfg. Co.
Albany, N. Y.

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3445 Michigan Ave., Chicago, Ill.
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Billings & Spencer

Automobile drop-forgings have been tried and found satisfactory by Automobile Manufacturers throughout the entire trade.

Behind B trademarked products is a drop-forging reputation of more than 40 years. To maintain that reputation only standard products are produced.

A few of the many B trademarked products:

Automobile drop-forgings
Stock and special forgings
Steering connections
Drop hammer equipment
Automobile tools and tool kits
All types of machinists' tools, etc.

Send blueprints for estimates. Prompt shipment assured.

Write for Catalog

The Billings & Spencer Co.
HARTFORD, CONN.

Dixon's Graphite Grease No. 677

for

Transmissions and Differentials

A notable increase in the power, speed and smoothness of your car or truck will at once follow your adoption of this splendid friction-reducing combination of the best mineral grease with the best flake graphite. The graphite supplies the lasting lubricating value which any grease lacks. For explanation, send for booklet No. 23, "Lubricating the Motor."

Made in
JERSEY CITY, N. J.
by

Joseph Dixon Crucible Company

Established 1827



THE McKIBBIN COON SKIN



Satisfaction Guaranteed

McKIBBIN Coon Skin Coats

The ideal cold weather garment for the motorist is a Fur Coat.

Raccoon Skin of the highest grade and in its natural color is the present day ideal Fur for Men.

McKibbin Coon Skin Coats are made from prime selected northern skins, ample in cut and unequalled in appearance or in their comfort giving qualities. Literally the best coon skin coat that money will buy, for **$160**

If you motor through the winter without one of these coats you are subjecting yourself to an unnecessary hardship. Ask your dealer or send direct to the manufacturers.

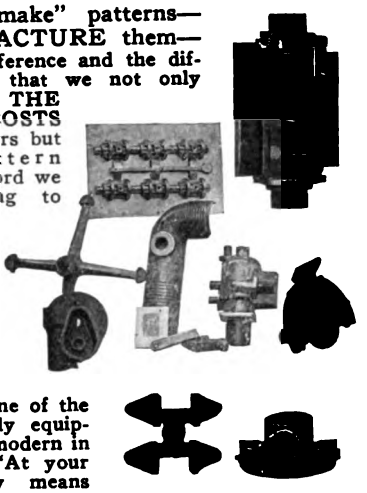
McKibbin Driscoll & Dorsey
Saint Paul

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We Manufacture Patterns

We don't "make" patterns—we MANUFACTURE them—

There's a difference and the difference means that we not only work to CUT THE FOUNDRY COSTS of our customers but to reduce pattern costs. In a word we are not trying to "feather our nest" off one job, but building up a steady, reliable trade that "sticks." Proof of the fact lies in the erection of our new factory—one of the most completely equipped and most modern in the country. "At your service" really means what it should here.



Michigan Pattern Works

1085 to 1089 Jefferson Ave. Detroit, Mich.

Bosch Plugs



should be listed in the catalogue of every dealer.

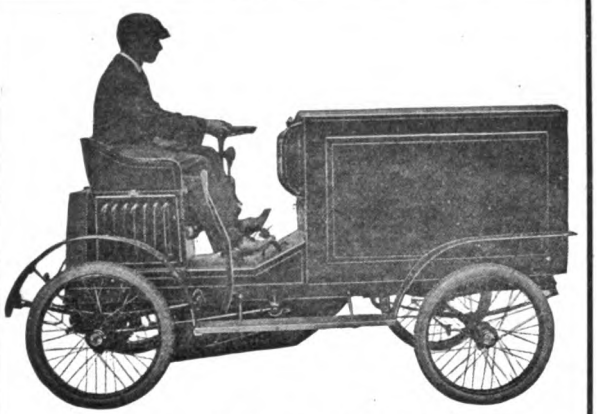
Free electros sent to any dealer who will show proof of publication.

Bosch Plugs had more than a 100 per cent. increase in sales—are you getting your share? All orders shipped promptly from nearby distributing points.

If you didn't get the Bosch News for December write for it now.

BOSCH MAGNETO COMPANY

224 West 46th Street New York



THE MOTOKART

was the first cycle car type commercial vehicle built in America. It has made good, its usage is universal and unlimited.

ENGINE: 3⅝ x 4 Two Cylinder, 4 Cycle Water Cooled.

WHEEL BASE: 69" Tread 44".

Price $400.00

Agents wanted everywhere

Tarrytown Motor Car Co., Inc.

1790 Broadway, New York City

MOTOPHONE

The Hand Operated Horn



$12

NO Adjustments Battery Troubles **NO Electrical Wiring Battery Expense**

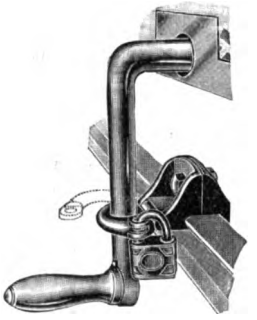
Motophone—was devised to meet the rapidly changing conditions which prevail in the Automobile Industry—to be an absolutely efficient—thoroughly dependable warning signal—WITHOUT being a constant source of expense to the owner.

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place Brooklyn, N. Y.

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THE B. & W. CRANK LOCK

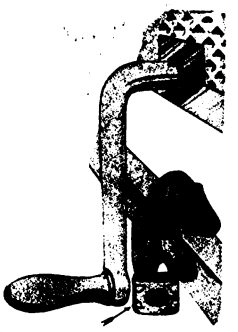


Investigate the B. & W. before your customer's car is stolen. Every motor car owner needs constant and complete protection against the thief and joy rider.

The only Positive Crank Lock manufactured that absolutely locks the crank in engagement with crank shaft, making it an impossibility to start motor by pushing car, towing or by jacking up the rear wheels.

It is a Positive Locking Device and can be attached by anyone in ten minute's time.

The B. & W. Lock is finished in black enamel and provided with a strong lock and two keys. To be attached to the front axle as shown in cut.



Price $1.50

Order from your Jobber or write us

UNIVERSAL MANUFACTURING CO.
RACINE, WIS.

SPLITDORF

"Ford Special" Plugs

are a distinct asset to every Ford owner in that they insure against plug trouble. SPLITDORF PLUGS cost more than many makes of plugs on the market, but they are WORTH MORE and are really the cheapest in the long run.
The highest priced automobile as well as the most popular priced car must have the BEST PLUGS to get the BEST MOTOR EFFICIENCY, and SPLITDORF "COMMON SENSE" PLUGS have always been the standard for effective results.

SPLITDORF ELECTRICAL COMPANY

Atlanta, 10-12 E. Harris St.
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Chicago, 64-72 E. 14th St.
Detroit, 972 Woodward Ave.
Kansas City, 1823 Grand Ave.
Los Angeles, 1226 S. Olive St.
Newark, 290 Halsey St.
New York, 18-20 W. 63rd St.
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Buenos Aires.



We furnish you complete, a new wooden steering wheel *rim*, with the heater installed (as indicated with illustration) and wire connection from wheel to magneto which furnishes the heat. To turn on the heat you insert the plug in socket nearest the ribbed part or heater on left-hand side of wheel. To turn off heat, remove plug and place in next adjoining socket.

The heating coil is composed of an indestructible metal tube in which is carried a heavily insulated heating wire. It is impossible to get a shock.

The rim we furnish is all ready to screw on in place of the rim you now have.

Write today for detailed description. Satisfaction guaranteed.
Price, $10. Prepaid in U. S.

The Warm Hand Steering Wheel Corp., Inc.
Poughkeepsie, New York

Patented April 23, 1907; Feb. 11, 1908; April 2, 1912. Other patents pending

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Each set consists of four volumes

$2.50 a Volume
$8.00 for the Entire Year (Four Vols.)
Express Prepaid

These prices apply to the stock on hand only and will be withdrawn when present supply is exhausted.

Motor World Publishing Company
1600 Broadway New York

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75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

USE A

SCHRADER
Universal Tire Pressure Gauge

and Save Your Tires

Price, $1.00

For Sale by

A. SCHRADER'S SON, Inc.

783-791 Atlantic Ave., Brooklyn, N. Y.



Everyone marvels that such a brilliant light can be produced for from 300 to 420 hours by only six 30-amp. dry batteries.

You can have an efficient electric lighting system at one-third the operating cost of standard equipment by equipping your car with

JM Mobilite Electric Lamps

These lamps are fitted with a special Tungsten bulb. The light is intensified by a powerful lens and reflector. Neat and attractive in appearance.

For head lights, dash lights, tail lights, speedometer light and for illuminating car interior. Also for motor boats, camps, etc.

Can be installed by any handy man.

If your dealer can't supply you write our nearest branch. Write anyhow for Booklet.

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Baltimore	Cleveland	Los Angeles	New York	Seattle
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Do not cling to tradition

Sanford
Motor Trucks

It would increase your business and lower your delivery costs if your team could average over 70 miles a day.

A Sanford Truck can do this. It will increase your delivery radius, add to the efficiency of your service, and lower your costs.

Sanford Trucks are doing this in Australia, Korea, Japan, England, and from Coast to Coast in this country.

They will serve you efficiently, economically, and well.

THE SANFORD MOTOR TRUCK COMPANY

W. Fayette Street, Syracuse, N. Y., U. S. A.

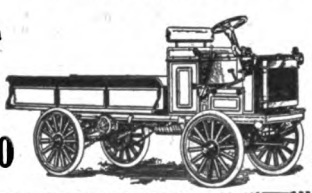
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Room 333, 17 Battery Place New York City, U. S. A.

F. T. SANFORD AUTOMOBILE CO., 481-483 Park Avenue

Distributors for New York City

One ton Chassis and Driver's Seat, **$1660**



One and one-half ton Chassis and Driver's Seat, **$1910**

Ford
THE UNIVERSAL CAR

Model T Runabout - - $500
Model T Touring Car - 550
Model T Town Car - - 750

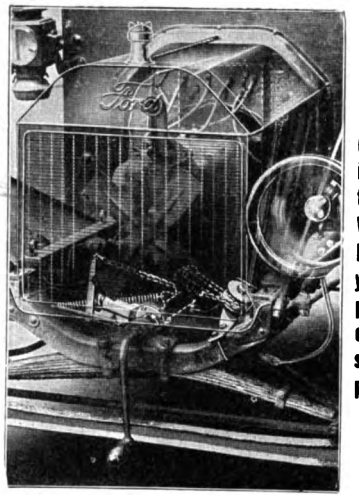
With Full Equipment f. o. b. Detroit

Ford Motor Company

Detroit, Michigan

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FORD ENGINE STARTER—$9.00



You do not have to leave your seat to start your Ford Motor when equipped with this Starter.

All that is necessary is to pull the lever. Will absolutely turn your motor past firing compression every pull.

Can be easily attached by anyone in about one hour. Absolutely no mechanical work necessary to install same. To be had at all dealers or direct on receipt of price. **$9.00**

DEALERS: WRITE FOR OUR SALES PROPOSITION *TODAY.*
For further information, write us.

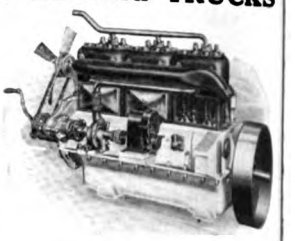
Universal Manufacturing Co., Racine, Wis.

THE RUTENBER MOTOR

Manufactured since 1901 for high grade

AUTOMOBILES and TRUCKS

3¾ x 5¼ four and six cylinder, 4¼ x 5¼ four and six cylinder Standard or Unit, and 4 x 4, 4½ x 5 and 4¾ x 5 Standard Types. All L Head 4 Cycle.



Manufacturers are invited to investigate our service and our facilities. Literature on request.

The Rutenber Motor Co.
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"PASS THEM ALL"

Knox

MOTOR CARS

Send for Pleasure or Commercial Catalogue

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Cut Gears of Quality
Complete Differentials

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Metal Products Axles

have been used for years in several well known makes and exclusively in two of the most popular cars on the market.

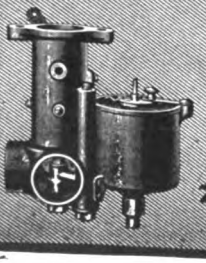
Built in standard types and to specifications.

Deliveries as you want them.

Let us quote you prices on your 1914 contracts.

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Gives Standard Carburetion

ZENITH CARBURETOR CO.
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Mosler Spit Fire Plugs

ARE THE BEST

A. R. MOSLER & CO.,
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Six Cylinder 65 H. P.
Equipped with Vulcan
Electric Gear Shift.

Four Cylinder 40 H. P.
Equipped with Vulcan
Electric Gear Shift.

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America's First Car

Our advertising campaign will send a buyer into your showroom more than half convinced that he should own a Haynes; the sale, however, results only from a succesaful demonstration; it is our firm belief that, as a Haynes dealer, you possess more than a sufficient number of convincing arguments to make every demonstration result in a quick and profitable sale.

May we tell you why we believe this?

THE HAYNES AUTOMOBILE CO., 1 Main Street, Kokomo, Ind.

Elyria-Dean
TRADE MARK

TUTO 2-TONE HORN

Electric Warning System

Electrically transmits two different and distinct sounds—the degree of sound being regulated by the pressure of the thumb upon one button located on the steering wheel. Sold complete with button and cord, $15.

Elyria-Dean Products mfgd. only by

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"Look for Elyria-Dean where quality's seen."

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The Standardized Car

The car that started the stampede to standardization

A Cole franchise is a valuable asset to any dealer. Find out about it.

Cole Motor Car Co. of Indianapolis

Cartercar

GEARLESS

A big, strong, powerful car, having all those refinements and up-to-date features that make the Cartercar a continual source of pride and satisfaction to the owner.

The Cartercar Gearless Transmission insures the utmost ease in handling with no jerking or jarring clutch and clashing or stripping of gears.

Built in various body types $1250—$1700—$2000

CARTERCAR COMPANY, Pontiac, Michigan

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KINGSTON · · NEW YORK
Builders of the
VAUGHAN
THE EFFICIENT SIX CYLINDER CAR WITH "DISTINCTIVE INDIVIDUALITY"
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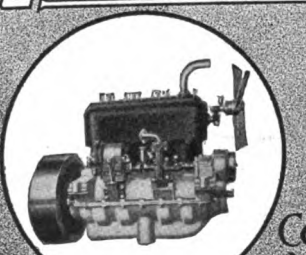
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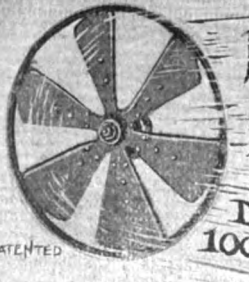
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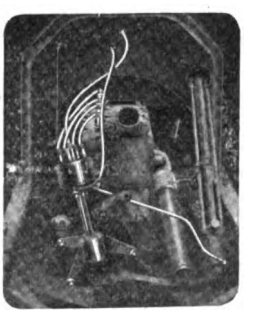
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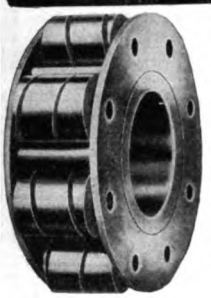
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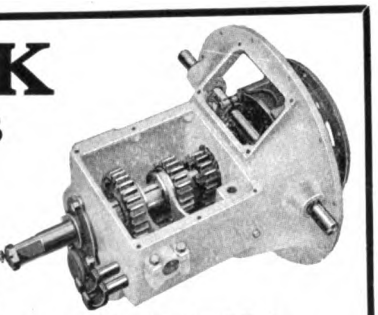
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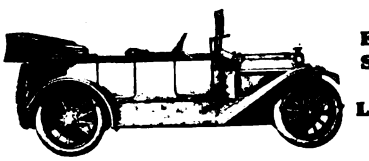


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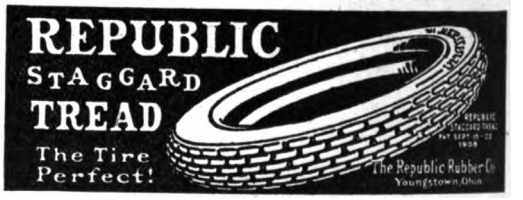
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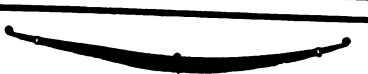
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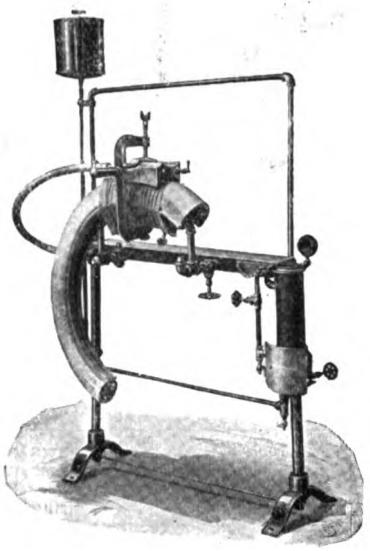
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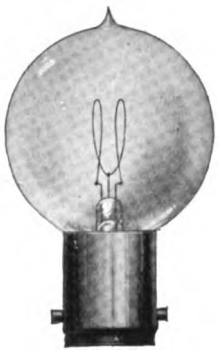


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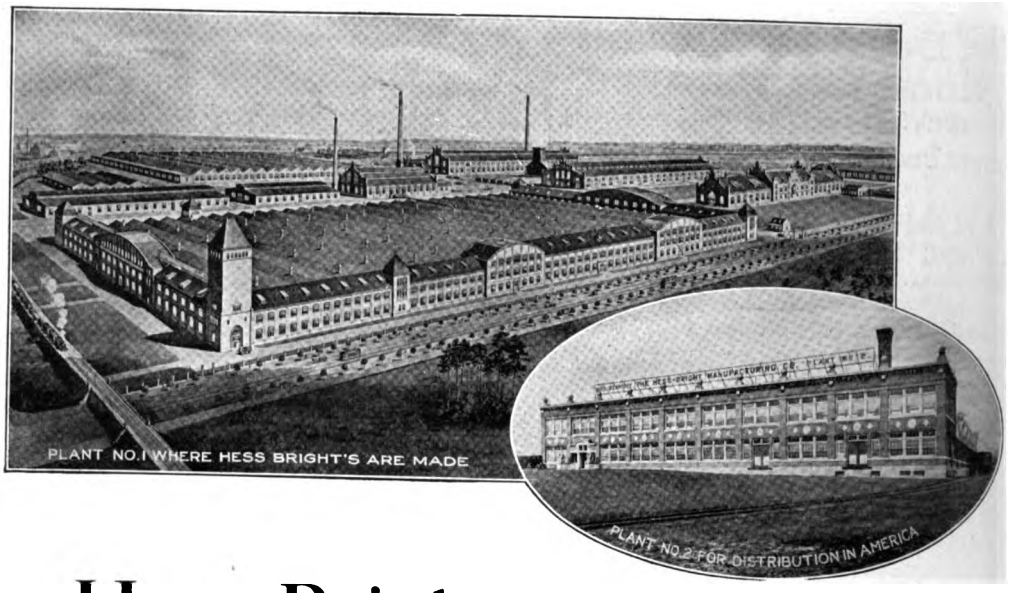
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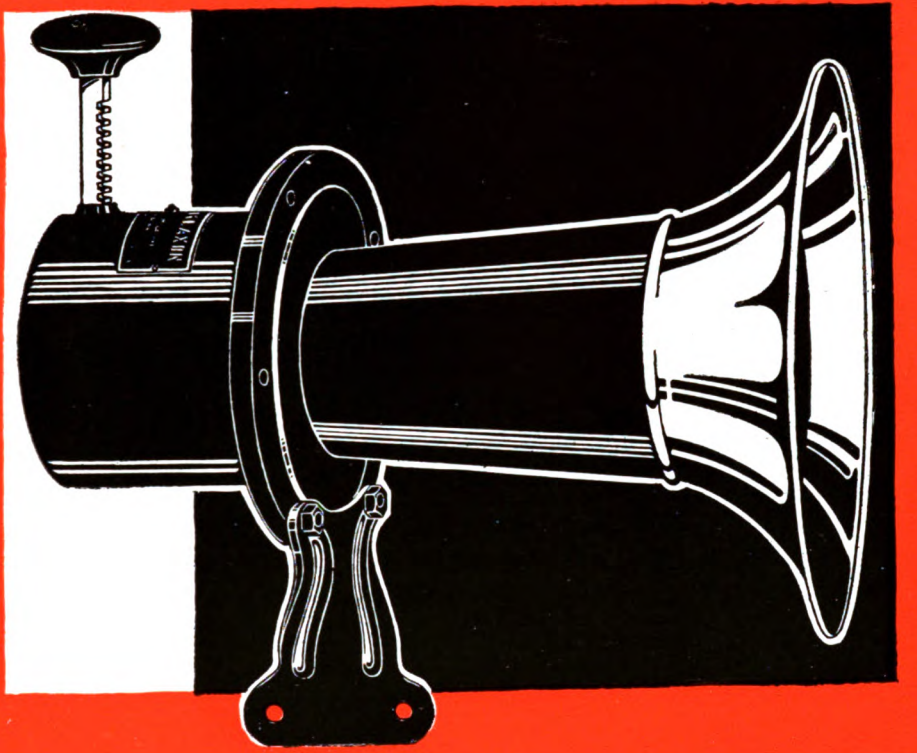
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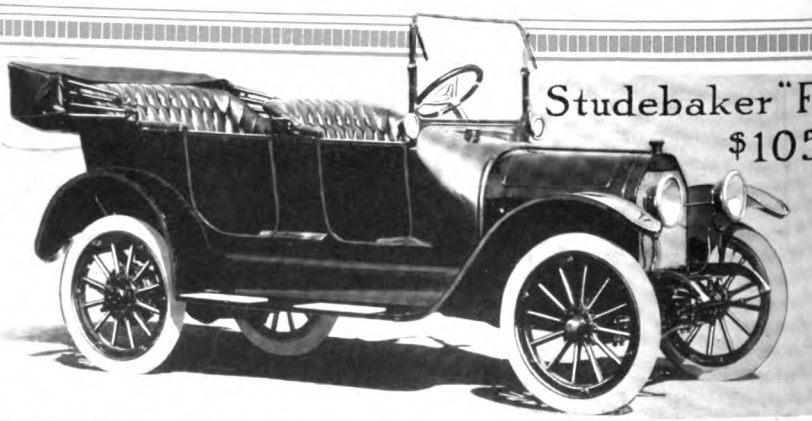
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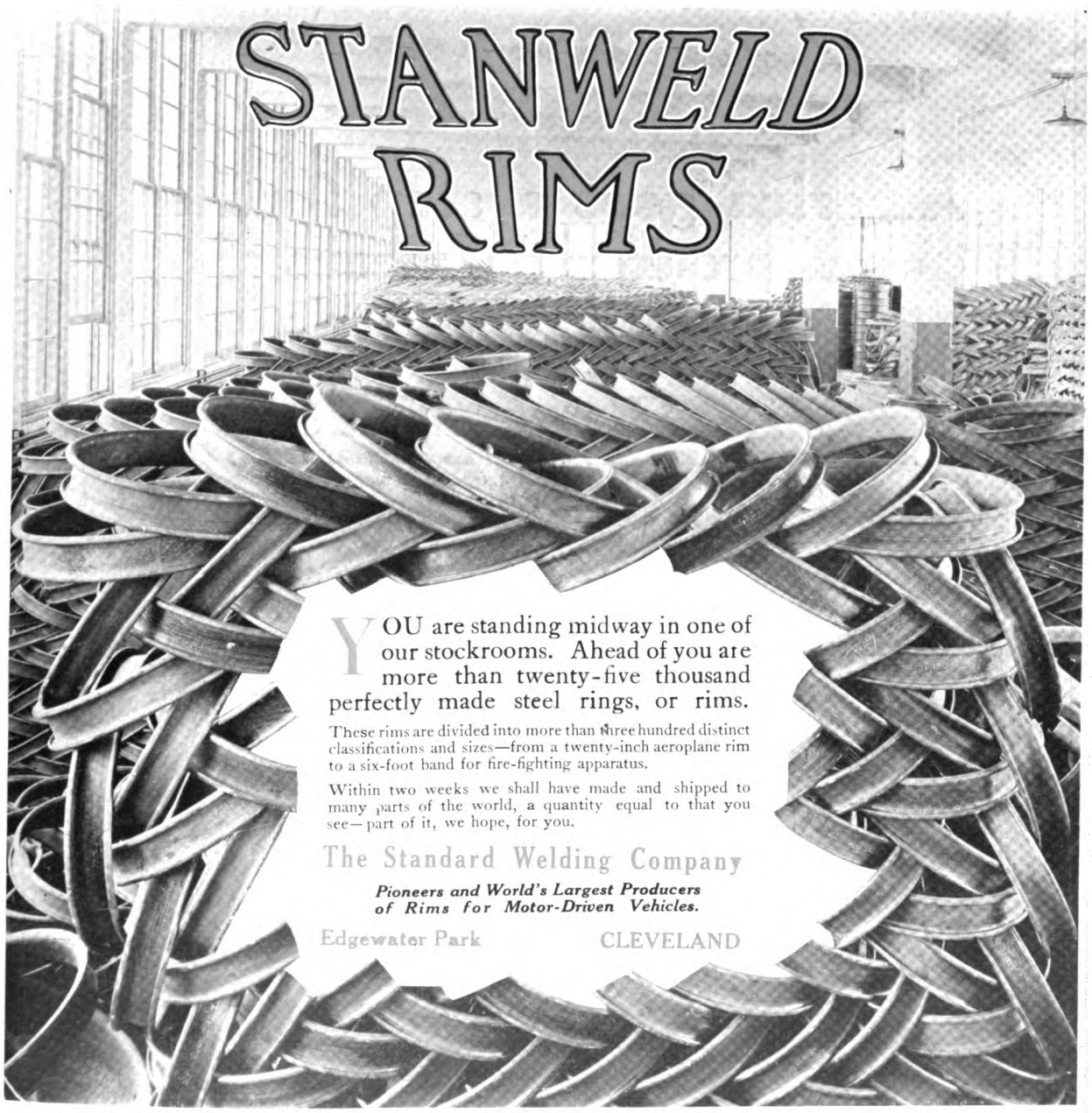
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MOTOR WORLD



NEW YORK, DECEMBER 18, 1913

LOOKING FORWARD TO TWO SHOWS IN TWO CITIES

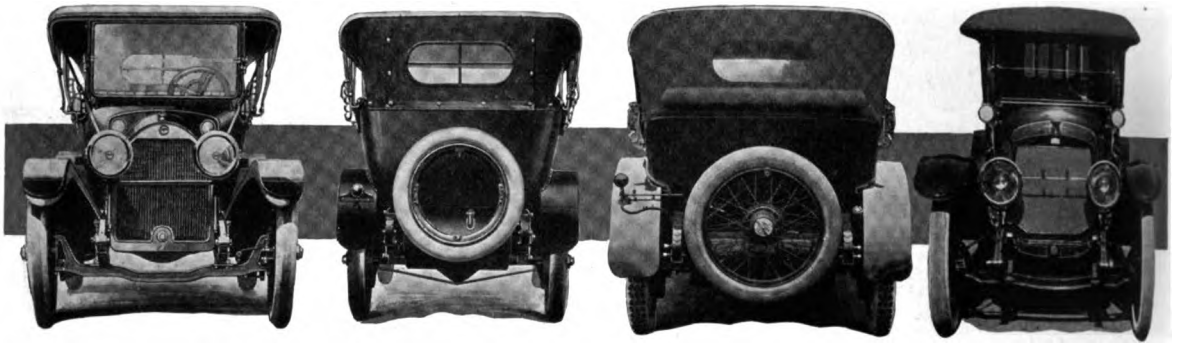
During recent years the tendency of things commercial in New York has been to "move uptown." Not because of the tendency, but for other reasons, not part but all of the New York automobile show of 1914 is "going uptown."

It is necessary to make this distinction because half of the 1913 show was located "uptown" and the other half "downtown," which latter distinction requires explaining, for the difference between uptown and downtown, in this instance, is merely the distance between 26th street and 46th street, where Grand Central Palace is located and where the Automobile Chamber of Commerce's show will be inaugurated Saturday, January 3rd, and continue until Saturday, January 10th.

Madison Square Garden, where the automobile show was born 14 years ago, still stands in the same old place on 26th street but it probably will know the automobile show no more; certainly it will not house it on this occasion, and its oft-threatened demolishment can now proceed for all the automobile industry may care.

The last New York show was split 50-50, two ways; that is to say, half of it was staged in the Garden, the other half in the Palace, and it ran two weeks in both places, the first week being devoted to passenger cars and the second to commercial vehicles. This time there will be no second week and no trucks; the show will be made up wholly of passenger cars and the thousand and one articles that are accessory thereto, and they will occupy four floors in Grand Central Palace. The same condition of things will prevail in

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Chicago, where, however, the Coliseum and the First Regiment Armory, which adjoins it, will again shelter the National show in the West from Saturday, January 24th, to Saturday, January 31st.

For the first time, too, both the New York and Chicago shows will be conducted under the auspices of one organization, the Automobile Chamber of Commerce, and also for the first time Samuel A. Miles, the general manager of the organization, will be the directing genius of both.

In other years, Miles's efforts were restricted to Chicago, where each twelvemonth he uncovered what was more than an automobile show, i. e., an automobile spectacle; for never was the decorative hand called on to perform such grand, gorgeous and glittering embellishment as characterized the Chicago exhibition.

Miles, however, is now a year older, and his hair is slightly thinner, and whether because of the fact, or in spite of it, the decorative scheme of both shows will be less lavish than in yesteryears.

DRAPERY AND FLOWERS TO BE NEW YORK'S EMBELLISHMENT.

Grand Central Palace does not readily lend itself to decorative treatment, and, in truth, it needs little; the grand stairway which leads to the great hall, with its many marble columns of Corinthian design and of noble height, in themselves constitute an imposing sight.

Such embellishment as will be employed will be chiefly in the nature of artistic draping of bare windows and walls, and of relieving the nakedness of the Corinthian columns. On each of the four floors, the windows will be draped with tapestries, the curtaining on each floor being of a different color. The wall panels will be concealed, or half-concealed, by huge floral designs, and at the foot of each window there will be boxes of flowering plants, while real smilax and other greenery will be utilized to relieve the bareness of the marble columns, not, however, by festoonery or garlandry but rather by a deft touch which will suggest that the smilax has taken root and is trailing loosely from the capitals of the columns themselves.

By comparison with New York, the Chicago show still will be a spectacle, even though less spectacular than the Chicago shows of other years. There a definite decorative scheme will be followed.

"CONSERVATORY EFFECT" FOR CHICAGO EXHIBITS.

For the week, both the Coliseum and the Armory will be transformed into make-believe conservatories. There will be no looking glasses and little of that rainbow-colored staff and plaster of paris which, fashioned into all manner of fantastic shapes, has made eyes blink and given to the Chicago show a truly theatrical aspect.

The conservatory design will begin on the ground floor and be carried to the roof. The wall spaces—those tucked under the gallery—of both buildings will be "dressed" to simulate a hothouse, more politely termed a conservatory; that is to say, canvas will the painted to resemble panes of glass, the same design being carried upward to the roof, which likewise will be concealed by the painted glass effect, fanciful scroll work relieving the "stiffness" of the "glass" panes.

In the Coliseum, the roof of which is domed or rounded, the real conservatory effect should be striking. On the ground floor, flowering vines will "take root" and "grow" upward to the roof, while on the floor slim poplar trees—imported from Austria, by the way—and giant vases overflowing with flowers will mark the aisles. Gold pillars surmounted by a statue of a kneeling automobile girl will mark the dividing line of each exhibit.

Even to those familiar with the Coliseum, however, the building probably will seem somewhat altered for, after many years, the overhanging gallery is to be so greatly extended as to permit the aisle to be placed outside the exhibits and next the railing; this will render unnecessary the ducking of heads which hitherto has been required when spectators filled the gallery and when the aisle was located next the wall, and just about the point where rest the bases of the great curved iron girders.

Despite the eliminations brought about during the year by the workings of the elimination processes, neither the New York nor the Chicago show will betray much of the effects, so far as car exhibits are concerned, at any rate.

THE NUMERICAL POPULATION OF THE TWO SHOWS.

At the forthcoming show in New York, there will be 82 exhibits of cars as against 89 at the 1913 exhibition; in Chicago, there will be 86 as against 93. Of the New York car exhibits, six will be electrics; of those in Chicago, ten will be electric vehicles. Of all the cars, seven "gas" and one electric will be exhibited exclusively in New York, while eight "gas" and seven electric will be staged in Chicago only.

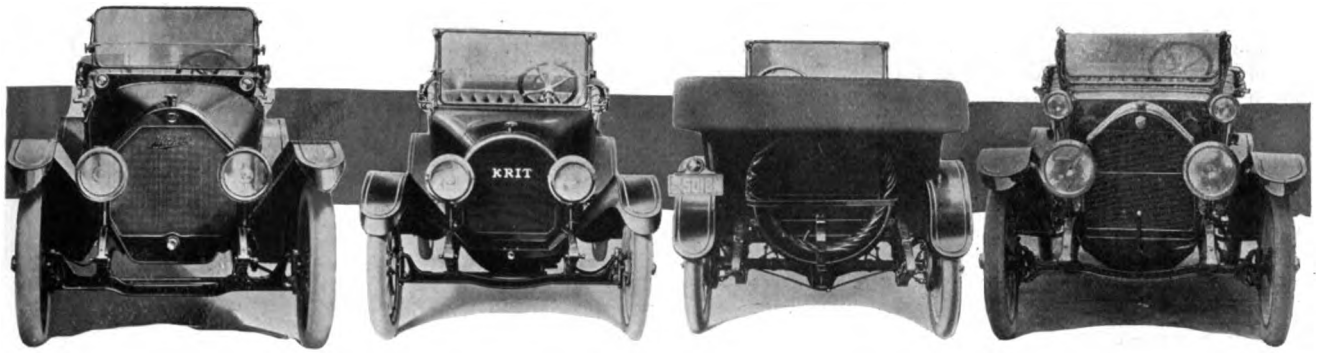
Among the other vehicles to be displayed in New York will be 12 exhibits of motorcycles, none of which will be in Chicago.

In both cities, however, there will be a considerable falling off in accessories. In New York last January, there were 320 exhibits of the sort; on the forthcoming occasion, there will be but 244, of which 111 will be confined to that city. At the last show in Chicago, there were 177 accessory exhibits; at the next show there will be 165, the total number of exhibitors of all sorts being 348 in New York and 251 in Chicago.

Perhaps the most notable absentees at the shows will be the tire exhibitors. By common agreement, practically all of the better known tire manufacturers, whose displays have been conspicuous features of all previous shows, will exhibit no more. The same is true of several other branches of the trade, notably those which have to do with axles, bearings and similar fittings.

However, the number of exhibitors that will be in attendance will be more than sufficient to fill the eye and keep keenly interested all whose interest is real

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Trade Tendencies Take Decided Turns

Left Steer, Streamline Bodies and Light "Sixes" and Equipment are Uppermost But Less Observable "Swings" are Numerous and Notable.

Everything, so the proverb runs, comes to him who waits. It may come dribbling along, bit by bit, slowly but surely—making haste deliberately, so to speak—and sometimes it comes all of a rush—kerplunk! and it's here! Not always are there indications of its imminence. Sometimes, promised improvements that are to be really big are more or less thinly disguised by those who style them "detail refinements." But little things added together made big ones and in the mass of detail improvement that has been brought to the surface during the year gone by, it is not even a little bit difficult to envisage the big change—the big improvement that really has been made.

FORCES THAT HAVE EVOLVED THE CAR OF 1914.

The car of 1914 is far and away superior to its year-old brother in construction, in appearance, in equipment. Deep down in its bowels the old functions are carried on in much the old way, but from the outside, topside, bottomside or just plain side, it is not very much more like its prototype than a magnificent steel Pullman car is like its antiquated wooden predecessor. Those who travel in railroad trains wanted comfort; they wanted luxurious appointments; equipment commensurate with the luxury reflected by their own homes; and a whole lot of other things too numerous to mention. They got them all. And in the same way, slowly and surely, has nearly everything come to the motorist who has waited for it. In the crop of cars that now is offered to a public already grown fastidious—a crop which will be "harvested" at the forthcoming shows in New York and Chicago—it is doubtful if, considering price, any one could ask for more—with or without a clear conscience.

The promise of the past twelvemonth has been more than fulfilled. Last year undoubtedly was fully and rightfully entitled to the all-covering designation, "The Year of Greater Value." The coming year just as undoubtedly is "The Year of Greatest Value." It has not come all of a rush—kerplunk! it's here! It has come slowly and surely. But the main fact is: **it's here.**

TRENDS OF THE TRADE

- LEFT SIDE CONTROL
- INCREASE OF LIGHT "SIXES"
- SMALL-BORE HIGH-SPEED MOTORS INCREASE
- CABRIOLET BODIES
- STREAMLINE BODIES
- MOULDED FENDERS
- CONCAVED SKUTTLES
- WIDER U-SHAPED DOORS
- SIDE LAMP ELIMINATION
- REAR AND COWL FUEL TANKS
- REAR TIRE CARRIERS
- LOWERED CHASSIS
- BLOCK "SIX" MOTORS
- DETACHABLE CYLINDER HEADS
- FLAT TOP PISTONS
- INCREASED PISTON SPEED
- OIL GROOVE ELIMINATION
- HOT AIR CARBURETTER INTAKES
- ELECTRIC GEAR SHIFTERS
- CANTILEVER SPRINGS
- INCREASE OF INTERNAL BRAKES
- ENCLOSED SPEEDOMETER DRIVES
- ONE-MAN TOPS

It is the year of greatest value from nearly every angle it is viewed; cars that always have been fully equipped carry still more equipment; cars that never had equipment now have it; and practically without exception the electric lighting and engine starting system that last year came into such vogue, has been adopted by large and small.

QUICK ON-COMING OF THE LIGHT-WEIGHT "SIX"

But perhaps the feature that gives the fact greatest emphasis is the unparalleled advance of the medium-priced light-weight six-cylinder car. Makers who last year brought forth their first "sixes" this year have added "light sixes" and among the brand new six-cylinder creations that stand out as being the first efforts of builders who heretofore have confined their efforts to the production of "fours," there are the National, Buick, Jeffery, Marion, Pathfinder, Abbott-Detroit and Imperial. Among the makers whose older six-cylinder models already have made a name for themselves and who have turned their attention to the production of lighter six-cylinder models, Kissel and Chalmers, Oakland and Franklin, Marmon, Lozier and Hudson stand out prominently.

Not any of these new models rightfully can be termed high-priced. Take the Hudson at $1,750; nothing high-priced about that. Or the Oakland at $1,785. Of the others, all but the Lozier is well below the $3,000 mark. As a matter of fact, most of them are considerably under $2,500. The Franklin, for instance, is $2,300; the National, $2,375; the Pathfinder, $2,200; the Buick, $1,985; the Imperial, $2,000; the Pathfinder, $2,200; the Ohio, $1,985; and so they go.

Among the brand new cars that will

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make their first formal appearance there are the Chandler and the Vaughan, both moderate-priced "sixes," the former listing at but $1,785 and the latter at $2,750, and in the four-cylinder class there is the Vulcan at $850, the Partin-Palmer at $975, the Briscoe, the McCord, the Howard and the Carnation, all of them under $1,000. The last two are cyclecars.

But though "sixes" undoubtedly have increased, "fours" have not dropped out to any appreciable extent. It is true that several makes have adopted the slogan "sixes exclusively" and have dropped their four-cylinder models, but in their place there are a number of new "fours" and in at least one case—the Lozier—a maker who one time dropped "fours" again has taken them up.

Nor will all the new cars to be exhibited under the bright lights be driven by poppet valve motors. There will be the Moline-Knight, which is a new type of Knight with all its four cylinders in a single block; and there will be the Speedwell-Mead rotary valve motor, which, by the way, has superseded all other Speedwell models; and the Mondex-Magic car, which is fitted with the Fischer sliding valve motor; and a brand new Premier, which has an overhead valve motor of still another new type. All of them will be uncovered for the first time.

LANDSLIDE MARKS ADOPTION OF LEFT SIDE STEERING WHEEL.

To the ordinary man in the street, who, by the way, is the man with the "roll," the appearance of any car always has been and probably always will be, a potent factor. Bodies that are, as the French say, outre or bizarre, serve a useful purpose in that they attract attention and stimulate curiosity, even for a moment. But it is the utilitarian body that really holds attention. In this respect, the cars that are destined to roll a good many others off the roads during the next year are the greatest attention holders that ever have been produced. They are utilitarian cars first and last and all the time.

Undoubtedly the greatest single trend of the times—though it can hardly be classed with the well-developed tendencies that are bordered 'round herewith because of its effectual standardization—that has served to develop the utilitarianism of the newer season's models, is the veritable landslide to left-side steering with center control. The genuine value of the system, where the universal rule of the road is "keep to the right," at last has received almost general recognition. Whereas last year it was comparatively easy to count the makes of cars steered from the left side, next year it will be a great deal easier to count those that still are steered from the right; right-side steering is passing out—or rather it has already passed out—and it soon will be but a memory.

The shifting of the control elements has had some slight effect in altering external appearance, for there no longer is any reason for controversy regarding whether gear shift and emergency brake levers should be inside or outside the body. But the factor that has done more to alter appearance than has anything else—it has changed the silhouette of the car almost as radically as the minaret gown has changed the silhouette of the modern woman—is the widespread adoption of the Prince Henry type of streamline body.

EFFECT OF STREAMLINE BODIES IN CHANGING THE SILHOUETTE

When the closed-front car first gave evidence of its influence three years ago, the striving and straining of designers to meet the demand was plainly apparent in the generally unfinished appearance of dashes and engine hoods and forward body lines. The wail that went up over the unsightly lines—the poor blending—was long and loud and sincere. During the following year the deep skuttle became a really pronounced feature and it gave the designers greater latitude for drawing unbroken lines from stem to stern. Some of them did so, though for the most part it was more or less painfully evident that the "knack" remained to be acquired. But things are different now. The development of the streamline body has been slow but sure. And whether or not the new bodies really meet their theoretical requirements—which is that their form shall cause the pressure at the back practically to balance the head resistance—it is certain that they are infinitely more pleasing in their finished state than they were in the embryo.

It can be said for these new streamline bodies, and it can be said for no other type, that they emulate the entering wedge principle. Though their fronts are not any narrower, their backs are in the majority of cases slightly wider and the wedge principle has been carried out by tapering engine hoods in a manner that is unmistakeable. Sloping hoods are now new of course, but there is a vast difference between the old sloping engine covers and the tapered ones that will be in such evidence at the shows.

When one or two American makers last year pioneered the tapered engine hood, they virtually uttered a promise that has been taken up almost without reserve. Coincident with the adoption of tapered hoods and streamline bodies, it has been a perfectly natural step for designers to turn their skuttles inside out, so to speak, by way of ensuring an unbroken sweep from the radiator to the dash. The deep skuttles that last year hid under convex surfaces this year are hidden a great deal more effectively under concaved surfaces. In this way a pleasing, unbroken line has been obtained that is in marked contrast to previous bulbous effects.

With the rapidly increasing use of the concaved skuttle in place of the convexed one, there has come a noticeable tendency to take the fuel tank out of its place of comparative obscurity beneath the front seats where it long has rested with little attempt made to put to good purpose the valuable space it occupies, and to place it instead at the back of the tonneau adjacent to the rear axle or else in the skuttle behind the board that holds the various meters and control devices. In more than a score of cases, fuel tanks that never have rested anywhere else but under the front seat now are in one or the other of these two positions, the preference being about evenly balanced.

ELIMINATION OF SIDE LAMPS INCREASES UNBROKEN EFFECT.

In such a great number of cases that the movement must be chronicled as one of the genuine trends of the trade—at the same time, it is one of the brand new developments of the year—designers have materially heightened the unbroken effects of their exteriors by the elimination of the usual side lamps; not even the cleverly flush-set lights that last year in so many instances ousted other types find a place on quite a number of the newer cars, their functions being performed either by the headlamps themselves, which are equipped with some sort of a dimming arrangement so that they can be used for city driving, or by small bulbs placed in the headlamps along with the larger ones. The movement is a pronounced one and is not confined to any one class of cars, the makers of high-priced vehicles as well as the makers of medium- and popular-priced ones having given it impetus.

The closer attention that had been given the designing and fitting of fenders was one of the pronounced features of last year's cars, and here, too, the promise of something still better has been amply fulfilled. Not only do the fenders on the new cars fit a great deal better than did the fenders on their predecessors, but they have been made to fit in a new way—at least, the way is new to American cars. Instead of being flat, as they always have been in the past, except for a few isolated cases, they now are crowned, or, rather, moulded;

(Continued on page 19.)

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REVISED WARRANTY COMBINES CAR AND TRUCK PROVISIONS

Phraseology of Former 90-Day Truck Guarantee Basis of All-Embracing One—Annuling Clause Made Clearer.

Official promulgation of the new all-embracing guarantee adopted by the Automobile Chamber of Commerce shows it to be substantially the warranty that previously applied to commercial vehicles. To all intents and purposes, the language is the same, provision being made, however, for the insertion of the name of each respective manufacturer and the signatures of the president and treasurer of each corporation.

The new warranty, as previously stated in Motor World, covers all vehicles and takes the place of the separate guarantees previously applied to cars and trucks. In at least one respect, so far as passenger cars are concerned, the revised warranty is far-reaching in that it has eliminated the clause which practically made the old guaranty no guaranty at all—the which unequivocally annulled the guaranty when a car was repaired outside the factory of its origin, a stipulation, however, which was more honored in the breach than in the observance but which, whenever desired, offered grounds for first-class dispute.

In the new guaranty, this clause is so amended as to annul the agreement only when the repairs affected, in the judgment of the manufacturer, "affect the stability, or reliability," of the car. The 90-day limit is still retained and, even more specifically than heretofore, is set forth the fact that the official guaranty, and no other, applies to whatever vehicle may be purchased. As it now stands, the newly adopted guaranty is as follows:

"This is to certify that we, the ....., of ....., warrant each new motor vehicle manufactured by us, whether passenger car or commercial vehicle, to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall within ninety (90) days after delivery of such vehicle to the original purchaser be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfactiton to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

"This warranty shall not apply to any vehicle which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any commercial vehicle made by us which shall have been operated at a speed exceeding the factory rated speed or loaded beyond the factory rated load capacity.

"We make no warranty whatever in respect to tires, rims, ignition apparatus, horns or other signaling devices, starting devices, generators, batteries, speedometers or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers.

"In witness whereof, the said company has caused this warranty to be signed by its duly authorized officers."

Ranney and Day Quit Automobiles.

Quite unexpectedly, A. Elliott Ranney and A. M. Day, president and vice-president, respectively, of the A. Elliott Ranney Co., of New York, and two of the best known men in the Metropolitan trade, not only relinquished those offices on Monday last but retired from the automobile industry, with which Ranney, particularly, had been connected for many years. S. J. Toback, sales manager of the company, succeeded to the presidency of the Ranney company, which distributes Hudson cars in the Metropolitan district.

First rumors stated that the Hudson Motor Car Co. had taken over the Ranney business and would conduct it as a branch, but this is authoritatively denied. Toback declares that Day and Ranney will retain their holdings and with himself and Dr. Steese will, as heretofore, constitute the company. Ranney purposes devoting himself to the exploitation of certain patents and inventions in which he is interested, while Day is to become a Wall street broker. The latter is the head of the New York Dealers' Association, and only two weeks ago was elected president of the State Automobile Trade Association.

Mosler Issues Seven More Licenses.

Seven more licenses to produce spark plugs under the Canfield patent have been granted by A. R. Mosler & Co., the owner of the patent, to as many manufacturers. The new licensees bring the total number to 19 and are as follows: Belvidere Screw & Machine Co., Belvidere, Ill.; Lockwood-Ash Motor Co., Jackson, Mich.; Oakes & Dow, Boston, Mass.; Reflex Ignition Co., Cleveland, O.; V-Ray Co., Marshalltown, Ia.; E. Q. Williams, Syracuse, N. Y.; Sharp Spark Plug Co., Cleveland, O.

MOTOR TRUCK CLUB BECOMES A NATIONAL ORGANIZATION

New York Body Undergoes Radical Change — Scope and Usefulness Enlarged and Truck Owners Appealed To.

Hereafter the Motor Truck Club of New York will be the Motor Truck Club of America, and instead of appealing chiefly to automobile trade interests it will appeal more largely to motor truck owners and operators.

The nationalization of the organization has been in progress for some time and took definite form last night, when a New York charter was issued to the Motor Truck Club of America and when the new organization elected officers as follows: President, George H. Duck, Locomobile; vice-presidents, Edward W. Curtis, Jr., General Vehicle Co.; Arthur J. Slade, Atlantic Truck Co., and George Stevens; secretary, Ellis L. Howland, Journal of Commerce; treasurer, A. M. McCool, La France Fire Engine Co.

The following were elected directors: For one year, E. L. Hoopengarner, Swinehart Tire & Rubber Co.; Geo. H. Pride, Heavy Haulage Co.; P. K. Sleeper, Seeman Bros.; W. O. Shadbolt, Shadbolt Mfg. Co. For two years, Frank W. Smith, United Electric Light & Power Co.; H. P. Caverly, National Lead Co.; E. Lascaris, De Dion; J. W. Perry, Lippard-Stewart. For three years, David C. Fenner, International Motor Truck Co.; C. R. Langenbacher, Lord & Taylor; Charles E. Stone, Peerless; Roderick Stephens, Olin J. Stephens, Inc.

While the titled officers all are actively identified with the automobile industry, the majority of the directors are truck owners.

During the year the club membership has grown from 96 to 257, of whom about one-fourth are truck owners. In the national campaign which will be conducted from headquarters, which will remain in New York, most of the recruiting will be done among truck owners, which of itself implies that the club's working policy will undergo changes in order that it shall be more far-reaching and of more benefit to truck buyers and truck users than to truck manufacturers and dealers.

Included the plans are the development of such departments as Efficiency, Development of Better Drivers, Legislative Work, Legal Protection and Advice to Members, Assistant Traffic Regulations, Aiding in Insurance Questions, the Publication of an Official Organ and furnishing the members of other truck publications, the conduct of an Information Bureau, library and clear-

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ing house of ideas for motor trucks, conducting educational classes for drivers, holding meetings for the interchange of thought between motor makers, sellers and users, and furnishing competent drivers.

It also is the intention of the organization to hold an annual competition covering several months and aiming to increase the efficiency of all who have to do with motor trucks. The contest will be similar to one conducted annually by the Commercial Motor Users' Association, of England, and will be broad enough to include drivers, superintendents and owners.

In the drivers' class, such items as mileage, tire and fuel economy, freedom from accident, dates of regular work, appearance, etc., will be the factors which will decide the award of prizes.

In the superintendents' class, which will include the men in charge of garages or equipment, awards will be based on periodical inspections of condition of vehicles and plants, plant efficiency, truck days in operation, etc.

The awards to owners will be decided on routing, loading, unloading and garaging,

Magic Motor Passed on to Fischer.

With the announced intention of licensing the building of the Magic crescent-valve motor if the company does not go into the manufacturing business itself, the Fischer Motor Corporation has been formed in New York City and this week took possession of a suite of offices in the Hudson Terminal building, at 30 Church street; the company is a successor to the Motor & Gear Improvement Co., of New York City, which attempted to build a Magic-equipped car styled the Mondex-Magic but which struck financial rocks this week.

According to Arthur C. Brady, the present Fischer manager, the Motor & Gear Improvement Co. was the holder of the Fischer American patent under which Magic motors are built, but the reason for the change of owners was not made plain. In fact, Brady was remarkably reticent and even disclaimed knowledge as to the principals in the corporation he represents.

Four More Swell M. A. M. to 265.

The strength of the parts and accessory trade, which has been cause for remark during a period of many failures of car and truck manufacturers, is reflected by the size of the Motor and Accessories Manufacturers, Inc., who this week reached the record figure of 265 members. The election of four new members brought it up to this number. They are as follows: Dunlop Wire Wheel Corporation, New York, N. Y.; Grant-Lees Gear Co., Cleveland, O.; Sulzberger & Sons Co., Chicago, Ill.; American Gear & Mfg. Co., Jackson, Mich.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

J. B. Bray has been appointed service engineer for the Atterbury Motor Car Co., of Buffalo. Previously he was connected with the Continental Motor Mfg. Co., of Detroit.

J. E. Baird has been appointed advertising manager of the General Motors Truck Co., in Detroit. Previously he served an Illinois plow company in a similar capacity.

M. E. Brackett has been promoted to the management of the General Motors Truck Co.'s New England branch in Boston. Previously he performed special work for the company with all of the United States as his territory. He succeeds J. L. Morris.

H. C. Gentry has been appointed a special factory representative of the Cataract Rubber Co., of Wooster, O. He will make his headquarters with Meyers & Grayson, 1808 Broadway, New York, who have been appointed Cataract distributers in the city.

Norris N. Mason, salesmanager of the Renault Selling Branch, Inc., in New York, and for many years connected with the importing trade, has resigned that office to become president of the Henderson Eastern Motors Co., of New York. He will assume has new duties on Saturday next.

A. F. Marshall has been appointed chief inspector for the Moline Automobile Co., of East Moline. He comes from Coventry, England, where for 10 years he was identified with the Daimler Motor Co., in which capacity he obtained the ripe experience with Knight engines which commended him to the notice of the Moline people.

Howard Wilcox, former president and general manager of the Standard Motor Truck Co., of Detroit, has been appointed a factory representative of the Federal Motor Truck Co., of that city. Wilcox disposed of his interests in the Standard company about two months since, at which time it was stated he would reengage in truck manufacture on his own account.

Former Mergerers Go Into Wilcox Trucks.

F. E. Kenaston, M. J. Scanlon and P. M. Starnes, of Minneapolis, who two months ago organized the Standard Motor Co. and incorporated it under the laws of Delaware with an authorized capital of $6,000,000, for the purpose of merging the Minneapolis Motor Co., of Minneapolis, and the Colby Motor Co., of Mason City, Ia., which merger fell through, have become identified with the H. E. Wilcox Motor Car Co., of Indianapolis. Their entry into its affairs has caused the capital of the Wilcox company to be increased from $1,000,000 to $1,500,000. The new money will be used to enlarge the Wilcox plant and greatly increase its production of trucks. H. E. Wilcox will become vice-president of the reorganized company, of which O. P. Briggs is president. Kenaston, Scanlon and Starnes are among the directors.

Used Car Man is Mysteriously Shot.

Morris Froehlich, president of the Times Square Automobile Co., of New York and Chicago, who was mysteriously shot one night last week in the latter city, has recovered from hos wound and offered a reward of $500 for the arrest of the shooter. Froelich was attacked in front of his home, as he stepped from his automobile, but a truss which he wore deflected the bullet and probably saved his life. He did not recognize the assassin and knows of no reason why anyone should seek to kill him. There are those who think that a buyer of used cars, in which Froelich's company deals, may have sought to "get even," but this theory is scouted.

Fisher Can't Use "Gramm" in Canada.

The Fisher Motor Co., of Orilla, Ont., which proposed reproducing or selling Gramm-Bernstein trucks in the Dominion, will be unable to do so; or at any rate, not with the name Gramm attached to them. This situation grows out of a decision rendered last week in favor of the Gramm Motor Truck Co., of Walkerville, which, when the Fisher intentions became known, brought suit to restrain the use of the word "Gramm" as being an infringement of the Walkerville company's trade mark.

Reiss Purchases American-Marion Parts.

Charles E. Reiss & Co., who handle the Hupmobile in New York City, have taken over the entire stock of the bankrupt American-Marion Sales Co., which includes a full line of parts and accessories for both the American and Marion cars, with which Reiss, until a few months since, was closely identified. The stock will be carried in Reiss & Co.'s service station at 250 West 54th street.

O'Connor Returns to Pullman Presidency.

Thomas C. O'Connor, who about 10 months ago relinquished the presidency of the Pullman Motor Car Co., of York, Pa., and retired from active participation in the company's affairs, while still retaining a minority interest, has returned to his old duties. He has been reelected president and is again devoting all of his attention to the Pullman establishment.

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The Week's Incorporations

Wichita, Kan.—Jackson Motor Co., under Kansas laws; to deal in motor cars.

Columbus, O.—Direct Drive Axle Co., under Ohio laws; authorized capital, $10,000. Corporators—W. E. Campbell, C. O. Haines and C. T. Phillips.

Cleveland, O.—Dunham Motor Co., under Ohio laws; authorized capital, $10,000. Corporators—L. A. Dunham, W. C. Rush and G. K. Wadsworth.

Cleveland, O.—Lincoln Motor Van Co., under Ohio laws: authorized capital, $1,000. Corporators—Leon A. Kujawski, Garfield Suhn and P. E. Pankuch.

Detroit, Mich.—Parrett-Barbour Motor Sales Co., under Michigan laws; authorized capital, $10,000. Corporators—W. L. Parrett, H. J. Latour and others.

Detroit, Mich.—Barton Auto Top Co., under Michigan laws; authorized capital, $10,000; to manufacture automobile tops. Corporators—Alberton and others.

Youngstown, O.—Dietrich Motor Car Co., under Ohio laws; authorized capital, $15,000. Corporators—Dale Dietrich, Albert Dietrich and Frank Dietrich.

Montreal, Que.—Gadbois, Ltd., under Canadian laws; authorized capital, $45,000; to deal in motor cars. Corporators—J. P. Gadbois, Joseph Boule and others.

Louisville, Ky.—Louisville Motor Co., under Kentucky laws; authorized capital, $5,000. Corporators—R. T. Durrett, W. P. Gray, Louisville; C. M. Logan, Cleveland.

Orangeburg, S. C.—Edisto Automobile & Machinery Co., under South Carolina laws; authorized capital, $5,000; to engage in a general automobile and machinery business.

Worcester, Mass.—Worcester Tire Fabric Co., under Massachusetts laws; authorized capital, $50,000. Corporators—A. S. Sykes, Rockville, Conn.; F. G. Norman, Worcester.

Racine, Wis.—Reliance Automatic Lighting Co., under Wisconsin laws; authorized capital, $10,000. Corporators—Benjamin F. Fliegel, Elbert E. Haud and F. H. Fliegel.

Los Angeles, Cal.—Buffalo Vehicle Co. of Pacific Coast, under California laws; authorized capital, $500,000. Corporators—John R. Avery, Arthur D. Avery and Norman A. Bailie.

Hartford, Conn.—Buick Taxicab Co., under Connecticut laws; authorized capital, $25,000. Corporators—Albert C. Bieber, Frederick H. Bieber and David B. Roberts, all of Hartford.

Toronto, Ont.—Toronto Auto Repair & Garage Co., under Canadian laws; authorized capital, $40,000. to manufacture and repair motor cars. Corporators—W. B. Proctor, J. A. E. McDonnell and others.

Dallas, Tex.—Adolphus Auto Rent Co., under Texas laws; authorized capital, $15,000; to conduct a general garage, taxicab and delivery business. Corporators—T. Bower, C. L. Bower and T. A. Pitman.

Levis, Que.—National Drop Forge Co., Ltd., under Canadian laws; authorized capital, $49,000; to engage in drop-forging work, manufacture saws, etc. Corporators—John B. Dorais, E. Belleau and others.

Toledo, O.—Silent American Motor Co., under Ohio laws; authorized capital, $10,000; to experiment with a newly patented noiseless motor. Corporators—J. R. Ford, W. C. Kirkbridge, H. C. Crane and others.

Westmount, Que.—Westmount Motors, Ltd., under Canadian laws; authorized capital, $50,000; to manufacture motor cars, bicycles, motors, etc. Corporators—William K. McKeown, Leopold Choquette, and others.

Chicago, Ill.—Chicago Motor Bus Co., under Illinois laws; authorized capital, $10,000; to operate a motor livery and transportation line. Corporators—Daniel J. Schuyler, Samuel A. Ettelson and Charles Weinfeld.

New York, N. Y.—Keaton Tire & Rubber Co., under New York laws; authorized capital, $1,000. Corporators—Harold A. Forbes, 611 West 137th street; William J. Kreuder, Bloomfield, N. J.; Thomas F. MacMahon, 1402 Broadway.

Brooklyn, N. Y.—Empire Postal Motor Co., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—Eugene Beugnet, 24 West 50th street; Gustave Posner, 62 East 90th street; Sidney S. Devine, 55 oJhn street.

Brooklyn, N. Y.—Oriental Rubber & Supply Co., under New York laws; authorized capital, $10,000; to deal in tires and rubber goods. Corporators—Homer G. Martin, 228 60th street; C. Roy Gedney, 594 6th street; Richard F. Lucey, 340 Clifton place.

New York, N. Y.—M. J. L. Rear Adjustable Bumper, under New York laws; to manufacture bumpers for automobiles. Corporators—Maise J. Leclerc, 554 West 114th street; Samuel Solinsky, 948 Leggett avenue; Henry Stern, 522 West 161st street.

St. Louis, Mo.—Pneumatic Devices Co., under Missouri laws; authorized capital, $50,000; to market an electro-pneumatic door closing and opening device especially adapted for automobiles, garages, etc. Corporators—Nelson S. Gottshall and others.

Buffalo, N. Y.—Hurd-Landsheft Motor Co., under New York laws; authorized capital, $7,500; to conduct a general motor car business. Corporators—Melville J. Hurd and Cora M. Hugo, both of Elma, N. Y.; Raymond Landsheft, 250 Humboldt Parkway.

New York, N. Y.—William Wiese & Co., under New York laws; authorized capital, $25,000; to manufacture upholstery for automobiles, etc. Corporators—Wm. Wiese and Chester Wiese, both of Bronxville; Albert Maertens, 83 Danforth avenue, Jersey City, N. J.

New York, N. Y.—Auto Accessories Association, under New York laws; authorized capital, $10,000; to deal in automobile accessories, tires, etc. Corporators—Samuel Falk and Henry C. Falk, both of 299 Broadway; Edward E. Braendle, 100 William street.

New York, N. Y.—Meyers & Grayson, under New York laws; authorized capital, $25,000; to manufacture and deal in tires, tubes, etc. Corporators—Morris Meyers, 945 East 163rd street; Shirley J. Grayson 251 Ft. Washington avenue; Mary Ginsburg, 691 Wales avenue.

Change in Capitalization.

Indianapolis, Ind.—Motor Car Mfg. Co., to $100,000.

Alliance, O.—Alliance Rubber Co., from $100,000 to $150,000.

Cleveland, O.—Parish & Bingham Co., from $224,000 to $1,000,000.

Detroit, Mich.—Packard Motor Car Co., from $10,000,000 to $16,000,000.

East Palestine, O.—East Palestine Rubber Co., from $50,000 to $150,000.

Detroit, Mich.—Detroit Motor Truck Body Co., from $10,000 to $40,000.

Minneapolis, Minn.—H. E. Wilcox Motor Car Co., from $1,000,000 to $3,500,000.

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MANLEY SECTIONAL GARAGE "FALLS" ON MAKER'S HEAD

Arrested on Charge of Misusing Mails —Complaint by Man Who Sent Money But Never Got Garage —"Behind Orders" Plea.

Charged with fraud and misuse of the mails, Charles H. Manley, head of the American Sectional Garage Co., of Detroit, was arrested in that city on Thursday last by a United States post office inspector. The particular complaint on which Manley was taken into custody was filed by R. E. Tuthill, in Bridgeport, Conn., who, more than four months ago, sent Manley $153 for one of his sectitonal garages, which, despite repeated demands, failed to arrive.

Manley advertised sectional garages at prices ranging from $140 to $400, but, so far as known, he never delivered even one of them. When his victims complained, he explained that delay was due to his inability to get material, or that his "factory" was so far behind in orders that he was not able to keep pace with the demand. Before going to Detroit, Manley operated in Palatka, Fla., as the Southern Portable House Co., but many inquiries sent to that address were returned unopened.

On the Tuthill complaint, Manley was held in $1,000 bond for examination on December 23rd.

Maxwell to Sell Columbia Factory.

Putting an end to hopes which had slumbered in Hartford, Conn., the Columbia factory of the Maxwell Motor Co. is finally about to be offered for sale. When the long-famous Columbia car was discontinued, it was given out that the factory in Hartford would be continued for the manufacture of parts, but instead it was shut down and has remained idle for many bonths. The property to be disposed of comprises 10 acres of ground, valued, according to a recent appraisal, at $110,000, and buildings, $250,000.

Ohioans in a Noiseless Motor Enterprise.

The Silent American Motor Co., of Toledo, which was incorporated last week under the laws of Ohio with a nominal capital of $10,000, has in view the manufacture of a recently patented noiseless motor which so impressed a number of Toledo automobile tradesmen that they have linked their names with the enterprise.

They are represented on the official board of the company as follows: Charles S. Turner, of the Morton Truck Co., president; J. R. Ford, J. R. Ford Realty Co., secretary; J. W. Hawk, Kinsey Mfg. Co., treasurer; S. F. Sawyer, general manager. S. L. Kelly, of the Electric Auto-Lite Co., and B. O. Gamble, of the Gamble Motor Car Co., are the directors. If the experiments which are in progress pan out as expected, the capital of the company will be increased to $300,000 and the engine be produced on a large scale.

Aristos Petitioned Into Bankruptcy.

The Aristos Co., which entered the trade several years ago in New York City as a distributer of Disco starters, which later made a shock absorber and a gas saver and which recently attempted to put out the Mondex-Magic car, was made the object of a petition in bankruptcy on Saturday last in the Federal court in New York City; the petitioners and their claims are: Charles Pine, $243; Edmund W. Lyons, $200, and James T. Parkes, $103, all on notes. It is charged that since September 2, while insolvent, the company made preferential payments aggregating $6,585. The company is a Delaware corporation with a capitalization of $400,000. Clyde D. Knapp is president and Henry C. de Rham, treasurer. Space which the company had contracted for at the New York automobile show has been taken over by the newly formed Fischer Motor Corporation, and it is stated that the Aristos Co. will be wound up.

Dealer and Customer Dispute a Point.

Was or was not Alexander W. Ailringer pleased with a used Overland car when it was demonstrated to him in October? This is the uestion which is the cause of a suit against him in the New York City Court by the C. T. Silver Motor Co., Metropolitan Overland distributer, and in which Silver says he will prove his point in about fifteen minutes.

Arlinger claims he promised to buy the car for $650 if it suited him when demonstrated, but he claims it did not suit; the Silver company alleges that it can prove that Arlinger was well satisfied at the time of the demonstration but declined to take the car when it was tendered him.

Creditors to Decide Columbus's Future.

For the purpose of deciding the future of the Columbus Buggy Co., of Columbus, O., which manufactured the Firestone-Columbus cars, a general meeting of the creditors has been called to occur today. The company failed on January 18th last, and since June has been in the hands of a group of creditors who bid in the plant. It is stated that the auditors' report shows a profit on the operation and today's meeting is to decide whether it is advisable to form a new corporation and continue the business.

ADAMS CAN'T COLLECT OLD CLAIM AGAINST U. S. MOTOR

Federal Court, Which Guided Receivership, Says Only "Fund" Available Was Dayton Property—Sold to Maxwell.

Gridley Adams, one-time advertising manager for the Dayton Motor Car Co., and later for the United States Motor Co., cannot collect an indebtedness he claims against the former concern, which was absorbed by the Maxwell Motor Co., when it grew out of the ashes of the United States Motor. Adams attempted to collect his claim this week in the United States District Court for the Southern District of New York, where the United States Motor receivership has filled two envelopes with documents weighing several pounds, but the court denied his request.

The court stated that in the case of a fund which is being distributed to claimants, there is no question but that the distribution rests in the discretion of the court, but in this case the only fund was the property of the Dayton company: this property, the court said, was sold by the court, and the only reason for seizing the property would be to enforce the terms of the sale. The terms of the sale, however, said nothing about paying anything to Adams, wherefore the judge said he didn't see where Adams was going to get anything.

Bearing Companys' Officers All Resign.

Preliminary to a reorganization of the Suspension Roller Bearing Co., of Sandusky, O., President E. A. Neighbor and Secretary-Treasurer W. W. Boyer and all other officers have resigned their offices, their resignations to take effect January 1st. Thereafter the affairs of the company will be controlled by a voting trust, of which August W. Smith and V. M. Montgomerr, of Spartansburg, S. C., will be the representatives.

To Mix Oils and Electric Goods.

Arrangements have been consummated whereby the Electric Appliance Co., of New Orleans, will handle the complete line of Invader oils and greases. The company's territory includes the States of Louisiana and Mississippi and parts of Alabama, Florida, Arkansas and Georgia.

Cox Opens Branch on Pacific Coast.

The Cox Brass Mfg. Co., of Albany, N. Y., has established a Pacific Coast branch in San Francisco at 1216 Van Ness avenue. It is in charge of Charles M. Weaver.

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In the RETAIL WORLD

Victor M. Stamm has resigned as manager of the tire department of the Goodyear Rubber Co., of Milwaukee, and will become manager of a branch which the Hub-Mark Rubber Co., of Boston, will establish in that city; Harold D. Detienne, also a former Goodyear man, likewise has resigned to establish himself as the Wisconsin Rubber Co. Both the Wisconsin and Hub-Mark concerns will distribute tires. The Goodyear Rubber Co., while not a tire maker and not connected with the Goodyear Tire & Rubber Co., is Wisconsin distributer of G & J tires. The Goodyear company is planning a new building to take the place of the one destroyed by fire October 26 at 384-6 East Water street with a loss of $600,000.

The Central Garage & Painting Co. has been formed in Pontiac, Mich., by F. W. Hamlin, a garage operator, and C. R. Greenwood and E. R. Farlow, formerly employed by the Oakland Motor Car Co., of that city; 15,000 square feet of space has been leased in the Osmun building, where the company will conduct a garage and repair business.

J. W. Shelor and W. W. Morris, Jr., have formed the Shelor-Morris Co. in Dallas, Tex., and "opened up" at 2219 Commerce street. They will distribute Velie cars and trucks through a large territory. Morris, for the past five years, has been with S. F. Bowser & Co. in Dallas; Shelor also is well known to the trade in that city.

Preparatory to replacing its entire horse-drawn equipment with motor trucks, the Joseph Schlitz Brewing Co., of Milwaukee, is securing plans for a two-story, fireproof garage, 200 x 150 feet, to cost $50,000; it will stand at 4th and Galena streets and, it is said, will be the largest private garage in the Middle West.

The Maxwell Motor Sales Co. is about to open up in Oskaloosa, Ia. Fred L. Good, who is district manager in that territory, will direct the business. A lease has been secured of the Harvin building, 40 x 120 feet, at 213-15 South 1st street. This will be the Maxwell headquarters in that territory.

B. L. Losee, formerly of Charlotte, Mich., has purchased the Tracy Garage, 117 Harrison street, Elkhart, Ind., and will style it the Lincoln Highway Garage. He has leased space to Kleinert & Elliott, who recently established a taxicab business in Elkhart.

Edward Coryell and William F. Anderson have purchased the Canon Auto Co. in Canon City, Col., from F. E. Thomas; it is located in the Rainbow Route Garage. Coryell has been in charge of the company's machine-shop for two years.

Mark Garner, Elmer W. Garner and William A. Garner, formerly of Flint, Mich., have formed the Garner Motor Car Co., in Bay City, in the same State; they will operate a garage and will distribute Chevrolet cars in six counties.

Alfred H. Coates, a manufacturers' representative in San Francisco, with an office at 444 Market street, has opened a branch office in Los Angeles, at 1329 West 5th street; J. P. Hermans is in charge.

Bunker Hill Garage is the style of a new business which will be established in Los Angeles by Samuel Richteiner; he will locate in a building which is now being erected at 126 North Grand avenue.

Boudinot & Cuthbert have opened a garage and salesrooms in New Brunswick, N. J., at 3 Schuyler street; they have the agencies for Studebaker, Hupmobile, Marion and American cars.

Heise Bros. are about to enter the garage trade in New York City; they have purchased a new garage building which was recently erected at 505 West 171st street at a cost of $15,000.

J. F. Hunt and Thomas Vasbinder, formerly of Chicago, are about to open a garage and repair-shop in Oskaloosa, Ia. They have leased the Slatten building, at 217-19 South 1st street.

Howard Miller and F. A. Brown have formed the Richland Motor Co. in Shelby, Ohio. They have opened salesrooms on South Walnut street and have secured the Buick agency.

C. C. Eichelberger, a veteran tire man on the Pacific Coast, has been made Coast distributer of Portage tires; he has made his headquarters on Golden Gate avenue at Hyde street.

The Tri-City Motor Co. has entered the trade in Moline, Ill., at 3402-12 4th avenue; C. M. Ahlene is manager. The company will make a specialty of garage and machine work.

John Mashak, of Cashton, Wis., has awarded the contracts for a fireproof garage, 50x100 feet; it will contain a heating plant and a completely equipped repair-shop.

Glen R. Austin, of Grand Rapids, Mich., has taken over the repair and storage departments of the Barkwell-Buick Sales Co. They are located on Pleasant street.

W. H. Phillips, of Ogden Station, Mich., has remodeled a blacksmith shop for use as a garage; part of the building, however, will be occupied by a blacksmith.

Nathaniel M. Cory and Homer Stanley, of Oskaloosa, Ia., have formed a partnership and will operate a garage; they will locate at 213-15 South 1st street.

The Bair Farrell Garage, in Webster City, Ia., has been taken over by H. Stenson, formerly of Minneapolis; he has taken charge and will operate it.

Damp Bros., of Lake Mills, Wis., have purchased a building in Fort Atkinson, in the same State, and will establish a garage and repair business there.

Frank J. Rockwell has completed a garage in Dorchester, Mass., at 739 Washington street; it cost $25,000. He styles it the Dunbar Avenue Garage.

L. G. Smith, L. C. Week and H. A. Donnelly have formed the Tri-City Commercial Garage Co. in Davenport, Ia. They will handle Universal trucks.

W. S. Edwards, of Wapello, Ia., has purchased the interest of W. S. Otto in the Eland & Otto Garage; Edwards replaces Otto in the firm name.

Eugene Ball and Don Leary, of Carthage, N. Y., have formed a partnership to operate a garage; they have styled their business the Elmhurst garage.

Hazen & Franks, of Philo, Ill., are about to enter the garage trade; they have leased what formerly was a livery stable and will handle Ford cars.

Government Square Garage is the style of a new business in Cincinnati, O. It is located on 5th street and will handle cars and accessories.

A garage is to be opened in Moorehead, Minn., to be operated in connection with

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the Hotel Comstock; it is located on the hotel property.

Recent Losses by Fire.

Hohokus, N. J.—Joseph F. Tout; garage destroyed. Loss, $2,000.

Watertown, Mass.—John E. Fleming; garage destroyed. Loss, $20,000.

Ironton, O.—Bonze Bros., South 3rd street; garage damaged. Loss not stated.

Dayton, O.—Charles Bandelspaugh, 630 Smith street; garage damaged. Loss, $1,200.

Anamosa, Ia.—Fred Sigsworth; garage, two cars, tires and tools destroyed. Loss, $3,000.

West New Brighton, N. Y.—Interboro Garage; garage and 40 cars destroyed. Loss, $25,000.

Minor Business Troubles.

A petition in bankruptcy has been filed against L. P. Cutler, of Rock Island, Ill. He operated a garage on 3d avenue.

The Firestone Tire & Rubber Co. has filed a petition in bankruptcy against the Wright Rubber Co., of Salt Lake City, Utah, claiming that the latter is insolvent and owes the Firestone company $526.04; it is charged that November 10 accounts aggregating $1,500 were assigned to the United States Tire Co., constituting a preferential payment.

The Springfield Tire & Rubber Co., of Springfield, O., has filed a petition in bankruptcy, with liabilities at $15,223 and assets of $8,441; nearly the entire indebtedness is unsecured. The Citizens' National Bank of Springfield claims $5,707 on notes; the other claims are small. The assets inclue: Stock on hand, $1,000; machinery, $4,120; accounts, $1,480; bills and notes, $1,238. J. W. Garnier is president and D. K. Gotwald the treasurer.

Foundryman and Motor Maker at Adds.

Claiming an indebtedness of $339.21, the Detroit Foundry Co., of Detroit, filed suit this week in the Supreme Court for New York county against the Kirkman Motor Mfg. Co., of Bath, N. Y. It is charged that goods to the value of $104 were supplied between August 4 and September 3, 1913, and that a three-months note for $265.34, given August 16, went to protest with a fee of $1.47. A credit of $32 was deducted from the total of these figures.

M. A. M. Fixes Date for Annual Banquet.

The annual banquet—the sixth—of the Motor and Accessory Manufacturers, which is the one big social event of the show season, has been fixed for Wednesday evening, January 6th. It will be served at the Waldorf-Astoria, New York. The annual election and business meeting of the organization will occur the same afternoon at the same place.



Dec. 17-20, Davenport, Ia.—Tri-City Automobile Trade Association's fifth annual show in the State Armory.

Jan. 2-10, New York City—Importers' annual automobile Salon in Hotel Astor.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 4-5-6-8, New York City—Annual winter meeting of the Society of Automobile Engineers.

Jan. 7, New York City—Eleventh annual meeting of the Motor Accessory Manufacturers in the Waldorf-Astoria.

Jan. 7, New York City—Sixth annual banuet of the Motor & Accessory Manufacturers in the Waldorf-Astoria.

Jan. 10-16, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's sixth annual automobile show in the Auditorium.

Jan. 10-17, Cleveland, Ohio—Cleveland Automobile Show Co.'s annual show in Euclid Square Exposition Hall.

Jan. 10-17, Philadelphia, Pa.—Philadelphia, Pa.—Philadelphia Trade Association's show in the Metropolitan building.

Jan. 20-24, Baltimore, Md.—Baltimore Automobile Dealers' Association's show in the Fifth Regiment Armory.

Jan. 12-17, Bridgeport, Conn.—Second annual show in the State Armory.

Jan 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

Jan. 24-31, Rochester, N. Y.—Rochester Automobile Dealers' Association's annual show in Exposition Park.

Jan. 24-31, Montreal, P. Q.—Montreal Automobile Trade Association's pleasure vehicle show.

Jan. 26-31, Scranton, Pa.—Automobile show in the State Armory.

Jan. 17-24, Detroit, Mich.—Automobile Dealers' Association's show in the Ford Building.

Jan. 31-Feb. 7, Minneapolis, Minn.—Minneapolis Automobile Trade Association's seventh annual show in National Guard armory.

Feb. 2-7, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's pleasure vehicle show.

Feb. 3-7, Kalamazoo, Mich.—Kalamazoo Automobile Dealers' Association's fifth annual show in the State Armory.

Feb. 3-7, Montreal, P. Q.—Montreal Automobile Trade Association's commercial vehicle show.

Feb. 4-7, St. Joseph, Mo.—St. Joseph Automobile Show Association's show.

Feb. 9-14, Seattle, Wash.—Annual show in State Armory.

Feb. 9-14, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's commercial vehicle show.

Feb. 14-21, Pittsburgh, Pa.—Pittsburgh Automobile Show Association's fourth annual show.

Feb. 16-21, Kansas City, Mo.—Annual show.

Feb. 18-21, Bloomington, Ill.—McLean County Automobile Club's show.

Feb. 21-28, Newark, N. J.—New Jersey Automobile Trade Co.'s show.

Feb. 22-March 1, Hartford, Conn.—Automobile Dealers' Association's show in Park Casino.

Feb. 21-28, Cincinnati, O.—Automobile Dealers' Asscciation's pleasure vehicle show in Music Hall.

Feb. 23-28, Omaha, Neb.—Omaha Automobile Show Association's annual show.

March 2, 3, 4, Cincinnati, O.—Automobile Dealers' Association's commercial vehicle show in Music Hall.

March 2-6, Fort Dodge, Iowa—Automobile Dealers' Association's show in the Armory.

Mar. 9-14, Des Moines, Ia.—Automobile Dealers' Association's annual show.

March 7-14, Boston, Mass.—Boston Automobile Dealers' Association's 12th annual pleasure car show in Mechanics Building.

March 17-21, Boston, Mass.—Boston Commercial Motor Vehicle Association's 12th annual commercial vehicle show in Mechanics Building.

Louis Hupp Not With Briggs-Detroiter.

Louis G. Hupp has not joined the Briggs-Detroiter Co., of Detroit, nor has he abandoned the manufacture of the Tribune car. Hupp is a close personal friend of President Briggs, of the Detroiter company, and the widely printed reports linking the two grew out of some special work which Hupp had performed in Briggs's behalf. Hupp still has irons of his own in the fire and they shortly will be held up to public gaze.

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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THE SHOWS AND THE CARS OF 1914.

Whatever may be said for or against the National shows, it is undoubted that they serve as the mile-posts of the industry; they mark its advance as nothing else can or, at any rate, has marked it.

During each of the more recent years, it has seemed, and has been asserted times without number, that the motor car had reached close to finality, that point which marks the end of the road. At such times, it has been usual to declare that such advances as had been made during the previous twelvemonth were chiefly in the nature of minor improvements—of refinement of details. And viewed separately the cars appeared to bear out such assertions. When brought together, however, and staged under one show roof, and there viewed collectively, the "minor" improvements and refinements usually have been found to be so numerous, or so far-reaching in their effects as to make those terms too belittling truly to represent the state of the art.

With another mile-post in close sight, the truth of these statements will be made even more distinctly and impressively visible. For, great as were the advances of the two previous years, the cars of 1914, which will be collectively displayed at the forthcoming shows, will bear witness that improvement is still the order of the age. That the improvements, viewed collectively, are of major and not minor importance will be plain to all who have eyes to see, and who are sufficiently interested to follow the painstaking forecast which is outspread on the pages of this issue of Motor World.

Quite apart from the item of equipment, which now figures so conspicuously, the cars, both outwardly and inwardly, are vastly better productions and vastly better values than even their immediate predecessors. Though ill-fortune may have visited an unusually large number of the trade units during the year, the cars on exhibition will bear witness that the not unnatural process whereby the fittest survives was not accompanied by stagnation of ideas or of energy.

INFLAMMATION AND PERSECUTION.

These are great days for the man, or woman, or organization that seeks the notoriety that comes of figuring in the public prints. All that is necessary is to "take a whack at the automobile"—to stand up and holler loudly about the "recklessness of drivers," the "ruthless disregard of human life," or the "slaughter of the innocents" by "arrogant owners of motor cars." The newspapers will hear the cry and do the rest. For the mental agony of newspaper publishers, or editors, is on the border line of the exquisite.

During recent weeks, particularly in certain portions of the East, the agony and shrieks of the daily press have made it almost appear that men who drive motor cars are not human beings—that they take keen delight in flouting the laws and in killing or maiming others who use the public highways.

The lawyer and the doctor, and many other kinds of man, who seek advertising, or need it, not to remark the dear ladies who want votes, or who don't want them, and who appear to have lots of time to indulge their whims—to some of these the "automobile agitation" has been a boon indeed; it has given them a chance to "get their names in the papers." To those high-sounding organizations, composed chiefly of one man, it has been a godsend; indeed, there is cause for suspicion that in order to assist their pockets some of these so-called organizations have "sicked" the lawyers and the doctors and the ladies onto the automobile. For when the public mind is thus inflamed, contributions flow most freely into the tills of such "societies" and "associations."

They are all having their innings these days and, as a result, the man who owns or operates an automobile—most of whom are law-abiding citizens—are receiving the attention of the police in a manner that is akin to persecution; they are being punished for the most trivial offenses while all others who use the public thoroughfares are permitted to do as they please. They probably will be permitted to continue to do so while such editorial notions as those expressed by the New York Evening Mail, for instance, find lodgment in human skulls, for the Evening Mail, flouting a suggestion that children be kept off the streets, actually declares that there are "plenty of drivers who would be more careless than ever if children were taught to be more careful."

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GETTING CASH FOR REPAIRS

Abolishing Credit in Shop Work a Better Business Method — One Garageman Who Tried It and Who Found It Not Difficult.

"All Repairs Cash."

That sign is being seen more frequently in garages the country over. It is a sign that wins. It is a sign of good business methods. Cash is rigidly asked for a commodity that requires cash in turn. The quently longer.

Prior to July 1st a certain Detroit garage used to do business in the ordinary way. Customers would come in and leave their cars for repairs and drive out again when the work was finished. Often they would take 60 and 90 days on their bills, frequently longer. With a large number of customers it did not take long to have a fair-sized sum of money tied up.

Peculiar Attitude Toward Garage.

There were other disadvantages. Often a customer would feel that as long as his bill was unpaid he was entitled to many free services. By some peculiar mental twist there seemed to be a feeling on the part of many that the garage was really under obligations to them in having them owe money.

This is all very nice, but it is very costly and it does not pay the help. And why borrow money, if you can, when the money owed by customers would take good care of you if only in your hands when due? Some thoughts like these ran through the mind of the garage man referred to and resulted in a decision to work for cash only.

He selected a big sign to convey the message to his customers. It was placed right near the door where it could not fail to be seen. Besides the words, "All Repairs Cash After July First," it bore the additional warning, "Repairs Must be Paid for Before Cars Are Taken from Garage. There are no exceptions to this rule."

It worked like a charm. Customers came into the office and asked for bills. They were always ready. The transaction was closed then and there. It saved much work in the bookkeeping end; it saved postage, collector's salaries and has resulted in a business-like appreciation on the part of customers worth while. Those that haven't the money stay away till they get it. Furthermore it is not half the trouble it used to be to meet the weekly payroll.

CONCERNING GUARANTEES COVERING REPAIR WORK

"Anent request for views on repairmen's guarantees," writes W. F. Schaphorst, "I believe the garageman who was held to the guarantee he made really has no cause for complaint. He is at fault because he should have been more explicit in the limitations of his guarantee. There certainly should have been a tire or a distance specification; otherwise I can't see but that the owner would have had the right to hold the garageman indefinitely. Had he said, 'I will guarantee your car for 500 or 1,000 miles after I finish it, to run flawlessly,' the guarantee would have been within reason.

"It is foolish to simply guarantee repair work on so complex a machine as an automobile that has already demonstrated its ability to quickly run itself out of order. It is all right for builders to make good all breakages and small repairs for a period of one year, but even the builders specify 'provided the broken part or parts needing repairing was defective at time of sale.' It is therefore up to the owner to sometimes attempt to prove the impossible. How, then, can an owner reasonably expect a garageman to guarantee an expensive car for $45.75—money that the garageman has already honestly earned?

"In the case cited in Motor World it was plainly up to the garageman to make good his promise. Any promise or guarantee (I can't see that there is much difference) should be kept. This man should have been more cautious in defining the extent of his responsibilities. I think the owner, who really had the garageman 'on the hip,' was a pretty decent sort of fellow to pay half the cost of doing the work over again. Of course, had the owner understood the intricacies of automobile repairing as well as a garageman does, had he wanted to be absolutely square, and had he sincerely believed that the garageman was in no way responsible for the new trouble, he would have borne the expense of the second repair entirely."

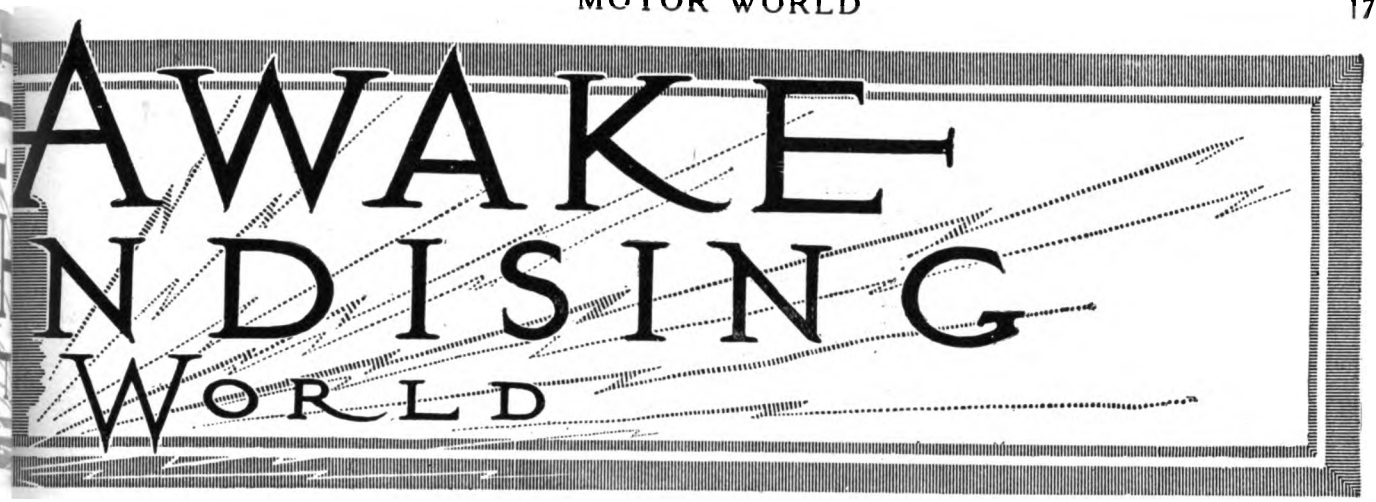
ACTION THAT SPOKE LOUD AND BROUGHT IMMEDIATE ORDER

Action will sometimes make sales when no amount of argument will start the ball a-rolling. After a long, hard struggle, the salesman for a paint manufacturer induced a big paint dealer to give him a sample order and permission to arrange a window display. To that salesman there was no time like the present. He got busy. Goods were drawn from the local warehouse, signs, "cutouts" and booklets were ordered.

When they arrived the salesman was on the spot. The windows were dirty. Instead of going to the boss and asking him to have them washed, the salesman secured a pail, water and the rest of the necessities and did the job himself. He hustled and he did a good job. He was in earnest and he was not ashamed to do a little menial work if it meant a better display of the goods he represented.

His act resulted in two things: First, it emphasized to that big dealer the value of clean windows. Second, the nerve of that salesman doing the job himself, tickled him. The following day the salesman pulled out of town with a $2,500 order, which is some order in the paint business.

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SALE THAT WAS EASY AND WHY

Instead of Telling of a Difficult Sale, Electric Man Describes an Easy One—But Despite Its Easiness There Was a Reason.

"I see Motor World is running a series of stories regarding difficult sales, but I am going to tell you how I made my easiest one," remarked an electric car salesman.

"It was made to the man who just drove by in that Hupmobile and waved his hand at me. He is a big, energetic fellow who is the head of our local factories. One day he dropped into our salesroom. 'I'm just looking around,' he remarked. 'My wife has an electric, but she's got an idea she wants one of this type.' I took him around the store, showed him what we had, asked him to sit down, and we had a nice little chat, during which we became really acquainted. I did not urge the purchase of a car, but just made myself pleasant.

Didn't Even Ask Him to Buy Car.

"Finally, he looked up at me and asked: 'Say, what color of upholstery do you think my wife would like?' I had never seen his wife, but I suggested to him that there was nothing any finer or more serviceable than that shown on the very car he had been looking at. 'How much will you allow me for my old car?' he then inquired. After getting the facts about it, I named him the allowance we would make. 'Well, just tag that car for me; I will send my old car in here to-morrow morning,' he responded.

"That's all there was to it. His old car came the next day; I sold it within 48 hours for just what I allowed him for it and got my money for it before he had taken delivery of his new car. Two days later along came his check for $2,000.

"Why was it so easy?" was asked the salesman. "The customer was ready—that was all," was his view of it.

The man who heard the story could not help but think that the answer applied with equal force to the salesman.

DEALER WHO PROTESTS AGAINST ABUSE OF SERVICE AGREEMENT

"We dealers, and the trade as a whole, have gone from one extreme to the other on the question of the service that should be given with a car," recently remarked a prominent Indianapolis dealer. "A few years ago everybody who purchased an automobile expected to get the worst of it and be robbed every time he drove a car into a garage for adjustment or repairs. To-day every salesman and every manufacturer is trying to convince the purchaser that he can run his car indefinitely without spending any money and that all adjustments and repairs are covered by the service agreement.

"Just as soon as the dealer acquires enough backbone to inform his patrons that it costs money to maintain an automobile, the same as it does to maintain a horse-drawn vehicle or any other means of transportation and that he will give him value received for every dollar he spends on it, the whole industry will begin to get on a more solid foundation."

WOMAN GARAGE MANAGER WHO TURNED LOSS INTO A PROFIT

That there is money in the automobile and garage business when carefully managed is indicated by the experience of an Ohio woman who took hold of the business and managed it after her husband had run it for some time at a loss.

In less than a year the business showed a regular monthly profit. Discounts were taken advantage of—parts and replacements were carefully watched. Workmen were kept busy and the work carefully planned. And both shop and salesroom were kept clean and neat where they had been sloppy.

People got to know that when they did business at this garage they would get businesslike treatment. If a job was promised at a certain hour it was delivered, and supplies were never allowed to run down. She looked after the details with a keen eye, and if she found a loafer among the shop men he was promptly fired. A wash-and-polish had to be well done before it was allowed out—and when anyone did business there they got the impression that someone was looking after the business and the customers.

DISPLAYING ACCESSORIES AND PREVENTING THEFT

Omer Thomas, who sells Buick cars in Kokomo, Ind., also carries a substantial line of accessories—and he displays them in one of his front windows instead of keeping them in the stockroom at the back of the garage, as do so many otherwise progressive dealers.

Incidentally, it is worth remembering that this window has a glass back with doors that lock, so that when supplies are sold from the window an adequate check is kept on them and there is no chance for that annoying petty larceny of small supplies.

WHERE SHIFTING A SHOW CASE QUADRUPLED THE SALES

When you have a showcase in your store for the display of accessories, take pains to place it where will be sure to be noticed. If possible, situate it so that every customer will have to pass by it. A Detroit dealer in tires and accessories had a show case in which there was a nicely arranged display of tire tubes, patches, tape, blow-out patches, cement, etc. But it was somewhat out of the way. He changed the location to a place where everyone who came in the store would be sure to see it. The effect was instantaneous. The sales of the articles displayed quadrupled the first month.

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ANSWERING THE VITAL QUESTION "HOW MUCH?"

Concerning the Cars that will be Exhibited at the New York and Chicago Shows

In these tables, designed for quick reference, the prices are arranged according to Chassis. The term "Price Range" signifies that different bodies, or equipment, or both, are applied to the same Chassis.

THE EVEN DOZEN OF CARS WHOSE PRICE IS BELOW THE $1000 MARK

Name	H. P.	Price Range
Twombly two	11.25	$395
Twombly four	12.1	495
Metz	22.5	475
Voiturette four	18.25	$495—520
Maxwell four	20.25	750
Vulcan four	18.25	750—850
Detroiter four	19.6	850—900
Empire four	22.1	900
Buick four	22.5	950
Overland four	27.25	950
Paige four	22.5	950
Partin-Palmer	38.0	975

CARS WHOSE PRICE RANGE IS BETWEEN $1000 AND $2000—MOSTLY "FOURS"

Name	H. P.	Price Range
Buick four	22.5	$1050
Studebaker four	19.6	$1050— 1200
Hupmobile four	16.9	1050— 1350
Overland four	27.25	1075— 1550
King four	24.4	1095
Regal four	22.5	1125— 1600
Oakland four	19.6	1150— 1585
Reo four	25.6	1175
Cameron four	21.0	1200
Lambert four	22.5	1200
Maxwell four	25.6	1225
Buick four	22.5	1235— 1800
Cartercar four	19.6	1250
Case four	22.5	1250
Herreshoff four	18.25	1250— 1650
Ohio four	28.9	1275
Paige four	25.75	1275— 1950
Lexington four	25.6	1295
Jackson four	27.25	1385
Allen four	27.25	1395
McIntyre six	29.4	1485
Auburn four	32.4	1490— 1590
Velie four	25.6	1500
Jeffery four	22.5	1550
Studebaker six	29.4	1575— 1950
Henderson four	40.9	1585— 1785
Mitchell four	28.9	1595
Cartercar four	27.25	1600— 1900
Imperial four	32.4	1650
Marion four	25.6	1650
Abbott-Detroit four	27.25	1685
Kline four	25.6	1685
Great Western four	28.9	1710— 2000
Hudson six	29.4	1750— 1950
Moon four	32.4	1750— 2350
Pullman four	26.3	1775
Chalmers four	28.9	1775
Apperson four	32.4	1785
Chandler six	27.3	1785
Haynes four	28.9	1785
Oakland four	28.9	1785
Oakland six	29.4	1785
Kissel four	32.4	1850
Case four	28.9	1850
Herreshoff six	27.4	1850— 1900
Jackson four	32.4	1885
Mitchell six	43.8	1895
Cole four	28.9	1925
Cadillac four	32.4	1975
Maxwell six	40.9	1975
Abbott-Detroit four	32.4	1985
Pullman four	30.6	1975
Havers six	33.75	1985
Buick six	33.75	1985
Kline four	29.7	1985
Ohio six	38.4	1985

ABOVE $1999 AND BELOW $3000—"SIXES" ARE NUMEROUS IN THIS DIVISION

Name	H. P.	Price Range
Velie four	34.25	$2000
Stutz four	36.1	2000
Auburn six	33.75	2000
Cartercar	27.25	2000
Imperial six	33.75	2000
Palmer-Singer six	38.4	$2000— 2595
Cadillac four	32.4	2075— 2800
Lozier four	28.9	2100
Auburn six	33.75	2000
Stutz four	36.1	2150
Marion four	25.6	2150
Marion six	34.0	2150— 2950
Chalmers six	38.4	2175— 2850
Moon six	33.75	2150— 2750
Abbott-Detroit six	33.75	2190
Apperson six	33.75	2200
Abbott-Detroit four	27.25	2250
Great Western four	28.9	2250
Hudson six	40.9	2250
Studebaker six	29.4	2250
Stutz six	38.4	2250— 2400
Jeffery six	33.75	2250— 2300
Henderson six	33.75	2285
Jackson six	43.8	2300
Case four	32.4	2300
Franklin six	31.6	2300— 2950
Cole four	28.9	2350
Jeffery four	22.5	2350
Kissel six	33.75	2350
Mitchell six	43.8	2350
Velie six	33.75	2350
Apperson four	32.4	2350— 2500
National six	33.75	2375
Moline-Knight four	25.6	2400
Pullman six	33.75	2400
Oakland six	40.9	2450
Havers six	40.9	2485
Haynes six	43.8	2500
Imperial six	40.9	2500
White four	22.5	2500
Oakland four	28.9	2500— 2600
Premier six	38.4	2600
Kline four	29.7	2585
Kline six	40.9	2585
McFarlan six	38.4	2590
Cole six	43.8	2600— 3000
Norwalk six	36.0	2685
National four	38.0	2750
Vaughan six	33.75	2750
Kissel four	32.4	2850
Pullman six	46.0	2850
Speedwell six	40.9	2850— 2950
Marmon four	32.4	2850— 3000
McFarlan six	48.6	2900
Lyons-Knight four	32.4	2900— 2980
Oldsmobile six	43.8	2975
Kline six	46.1	2985
Jeffery four	22.5	3000

$3000 AND UP—THE DIVISION WHERE UNDISPUTED LUXURY HOLDS SWAY

Name	H. P.	Price Range
Hudson six	40.9	$3100
Packard six	38.4	$3100— 5150
Abbott-Detroit four	32.4	3150
Oldsmobile six	43.8	3150
National four	38.0	3150— 4800
Kissel six	48.5	3150— 4900
Kline six	40.9	3200
Franklin six	31.6	3200— 3400
Cadillac four	32.4	3250
Lozier six	36.0	3250
White four	22.5	3250
Keeton six	33.75	3250— 3975
Jeffery six	33.75	3250— 3700
Winton six	48.6	3250— 4600
McFarlan six	38.4	3300— 4000
White four	28.9	3300— 5000
Kissel six	33.75	3350
Abbott-Detroit six	33.75	3500
Kline six	46.1	3500
Norwalk six	38.4	3500
Chalmers six	38.4	3600
McFarlan six	48.6	3610— 4310
Stearns-Knight four	28.9	3750— 5100
Lyons-Knight four	32.4	3900
Premier six	48.6	3950— 6000
Austin six	38.4	4000
Cole six	43.8	4000
Fiat four	31.0	4000— 5300
Kissel four	32.4	4100
Fiat four	17.0	4200— 5200
Lyons-Knight four	32.4	4300
Pierce-Arrow six	38.4	4300— 5400
Peerless six	38.0	4300— 5500
Locomobile six	43.3	4400
Fiat four	42.0	4500— 5800
Stevens-Duryea six	41.9	4550— 6200
Packard six	48.4	4650— 6100
White six	43.8	4800— 6300
Pierce-Arrow six	48.6	4850— 5800
Stearns-Knight six	43.8	4850— 6200
Premier six	38.4	5000
Austin six	48.75	5000— 6000
Peerless six	48.0	5000— 6200
Marmon six	48.6	5000— 6450
Fiat six	46.0	5000— 6300
Locomobile six	48.6	5100
Pierce-Arrow six	60.0	5850— 6000
Peerless six	60.0	6000— 7200

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TRADE TENDENCIES TAKE DECIDED TURNS

(Continued from page 8.)

they have become, in fact, a veritable part of the car, and are not, as no inconsiderable number of them have suggested in the past, a something crudely made and apparently fastened on at the last minute. That the improvement is a marked one must be apparent to even the most casual observer.

LOWER BODIES AND REAR TIRE CARRIERS INCREASE STABILITY.

Bodies themselves now are considerably lower than they have been in the past. There is, in fact, a well-defined tendency toward compactness and an increase in stability, both of these features having as contributing factors the increasing adoption of underslung springs at the rear, and in some cases at the front as well. Naturally, the shifting of gasolene tanks to the rear has served to fill the void between the body and the rear axle, and in this way to increase the effect of solidity. The cleared running boards that last year caused so much talk now are clearer than ever, for the tendency to carry spare tires at the rear of the tonneau has increased to the point where it now demands serious consideration. In some cases, makers still prefer to carry spares on the running board, though the majority have adopted the rear position as being preferable both insofar as appearance goes and as a measure to carry out the streamline effect.

The carriers themselves, of course, have undergone no little refinement, the most prominent feature of which is a concerted effort to support the inflated tires and their comparatively heavy rims in such a way that their weight comes on the rim rather than on the tire; quite as important in its way has been the development of carriers which dispense with straps and are fitted with locking devices which, while discouraging the unwelcome attention of the light-fingered gentry, still offer hitherto unknown advantages in the way of quick demountable features.

SEATING IMPROVEMENT IN AUXILIARY SEAT DISPOSAL.

It goes without saying, of course, that in the general refinement that has been made, the comfort of those who ride in the cars has not been overlooked. The limit in the thickness of upholstery appears to have been reached and greater attention now is being paid to the height of the seats and to the angle of inclination of both seat and back. For the most part, seats that heretofore have been practically parallel with the floorboards now are tilted slightly backward to give the luxurious lolling effect of the club lounge.

A notable improvemt has been made, too, in the disposition of the so-called auxiliary seats that make five-passenger cars into seven-passenger ones. In many instances such seats remain in the auxiliary class, which is to say, they apparently are intended only for emergency use and are properly uncomfortable when used as fixtures. In other cases, however, it is apparent that a genuine effort has been made to make them really comfortable for everyday, continuous use; they are more substantial; more comfortable; are fitted with arm rests; and what is perhaps most important, they do not interfere with the occupants of the rear seats when they are in use, and when they are not in use fold up quite out of the way and almost, if not quite, out of sight. Coincidently, entrance to the tonneau has been facilitated by the general adoption of wider doors of what has come to be styled the full U-shape.

OPEN AND CLOSED CAR FEATURES IN CABRIOLET BODY STYLES.

The unmistakable manner in which the comfort of passengers has been catered to is made plain by the development of what virtually amounts to a new type of convertible body, which may be either an open roadster or a coupe on occasion and at the whim of the owner. Some makers style them coupelettes, though it is likely that the more general designation "cabriolet"—pronounced cab-ri-o-lay—is the one that best describes them and that will endure the longest. They are, as the designation does not make very plain, a combination of roadster and coupe, and bid fair to take the place the coupe gave promise of assuming two years ago.

Further down in the bowels of the car in the abstract, the motor continues to be one of its most important parts and the improvements that have been made in it are both numerous and suggestive. During the past year, the small bore, long stroke motor has more than held its own—in fact, it has made a distinct advance, for there now are a great many more motors with bores that range from 3¼ to 3¾ inches and strokes of from 5 to 5¾ inches than there ever have been in the past; the large-bore, comparatively slow-speed motor appears to be giving away slowly but surely to the lighter, faster running small bore engine that foreign manufacturers long ago adopted as the more efficient and the more flexible of the two. The increase in piston speed is worthy of more than passing notice, for it indicates not only a tendency toward higher efficiency in general but serves to make plain that no little improvement has been made in both materials and balancing methods. To operate the motors of a few years ago at the speeds that now are common would have spelled quick and certain disaster.

SIX-CYLINDER BLOCK CASTINGS SHOW WELL-MARKED INCREASE.

The block casting of cylinders grows apace. It was to be expected, of course, that block-cast "fours" would increase and that the expectation was warranted has been made plain. But the real surprise is contained in the strong advance of the block-cast six-cylinder motor. Last year there was scarcely more than half a dozen makers who essayed the difficult task of incorporating all six cylinders in a single casting. The accomplishment marked a distinct advance in motor manufacturing methods. During the past year, however, the block casting of six-cylinder units has made a truly wonderful advance; with very few exceptions the new "sixes" that will be revealed by the forthcoming shows will exhibit the simplicity, the compactness and the rigidity that is obtainable in no other way. Incidentally, though most of the new block-cast "sixes" have L-head cylinders, several are of the T-head type, which suggests still further difficulties that have been overcome. L-head and T-head cylinders, by the way, in both "fours" and "sixes," remain in about the same proportion, though, if anything, the L-head type has made a slight advance in popularity. Quite as important in its way, as presaging further development along similar lines, is the appearance of the first block-cast Knight engine—the Moline.

REMOVABLE CYLINDER HEADS INCREASING IN POPULARITY.

Among developments more or less unlooked for, the apparently increasing popularity of the detachable cylinder head furnishes food for thought. Detachable heads always have remained a factor, though a minor one, and when last year the makers of Garford motors came out with a detachable head "six" the action presaged a slight return to favor of construction which permits such ready access to the combustion chambers. Now, however, the return

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to favor would seem to have set in in earnest, for several other makers of "sixes" have formally adopted the detachable head.

Another tendency that is interesting as revealing a return to favor of construction discarded in favor of something else because of theoretical advantages that experience would seem to indicate have not been as fully borne out in fact as on paper, is the substitution of plain, flat-topped pistons for cupped or domed ones. It long has been advanced by engineers that the theoretically perfect combustion chamber should be as nearly spherical as can be obtained. And while this is true to a certain extent, it is stated by those who have indicated a preference for flat-topped pistons that the advantage of the flat, smooth, machined surface in discouraging the collection of carbon deposits and in facilitating their removal outweighs every other advantage.

HOT AIR CARBURETTER INTAKES NOW ARE COMMON PRACTICE.

Delving still deeper into the internal economy of the new motors brings to light a tendency which a year ago probably would have been viewed with alarm by more than one person less conversant with engineering matters than a real "M. E." It is nothing more or less than that the time-honored oil grooves that always have been deemed absolutely essential to the proper operation of main bearings be eliminated. Several makers have taken the initiative in this respect on the well-known theory that for the least possible resistance a bearing should literally float upon a film of oil.

Closely allied to matters pertaining to lubrication are carburation and ignition. In neither field, however, has any very radical departure from previous practice been made during the past year. Due, perhaps, to the lowering gravity of fuels, and to the knowledge that successful use of the heavier distillates requires pulverization quite as much as strenuous attempts at vaporization, intake manifolds in some instances have decreased slightly in diameter, the speed of the mixture being proportionately increased. Practically without exception, manufacturers now are fitting hot air intakes to the carburetter and in a few isolated cases others have fitted electric heaters designed to facilitate starting during cold weather, the heater being inserted in the intake pipe. In the majority of cases, where hot air intakes are fitted, they consist of plain, flexible pipes leading to some sort of box-like contrivance on or adjacent to the exhaust piping.

With regard to kerosene carburation, very little has been done during the year gone by. Of the several devices that have been heralded as making the solution of the problem imminent none has succeeded of wide adoption as yet. As already is fairly well known, the makers of Henderson cars stand ready to equip them with the Harroun kerosene carburetter, though no other manufacturer has indicated as great a measure of faith in the possibilities of oil.

SEVERAL AIR STARTER USERS "CHANGE OVER" TO ELECTRIC.

One other development connected with motors, serving as an apt indication of the trends of the times, pertains to starting devices. During the past year the electric engine starter has made further advances upon the ranks of air starters. Although a number of makers still adhere to the pneumatic device as embracing a number of advantages peculiar to itself, several prominent makers, including the Pierce-Arrow and Chalmers companies, have substituted electric starters for the pneumatic devices they always have used. McFarlan and Stevens-Duryea and Winton, and a few others, however, apparently are quite content to let well enough alone, which is to say, their pneumatic starters will remain, though all of them have adopted electric lighting quite as a matter of course.

OVERSTEP FOUR-SPEED GEARSETS ADOPTED BY MANY MAKERS.

Further along on the conventional chassis, the four-speed gearset in which the third speed is direct drive, has made sufficient advance to entitle it to consideration, several makers having adopted it for the forthcoming year. The single electric gear-shifting device which made its first public appearance at the last Boston show still bears the distinction of being the only one that has been worked out to a point of perfection warranting its general adoption. And that the adoption bids fair to be much more general ere another year has rolled around is revealed by the fact that already half a dozen car makers have incorporated it in their products and will exhibit it for the first time at the forthcoming shows. Pullman, Norwalk and Haynes all will have it. In addition, the McFarlan car, which is the first to be equipped with the Gray pneumatic engine starting and gear shifting apparatus, will swell the ranks of the cars in which the labor of gear shifting has been eliminated.

Spring suspension is another feature of the year's cars that has been given very careful attention at the hands of designers. The Lanchester type of cantilever spring gives promise of becoming a genuine factor in the not far distant future. Several makers have cast in their lot with it for the first time. In the older types of spring suspension, the most noticeable alteration is embraced in the employment of thinner leaves and the provision of some means for ensuring positive lubrication between them. Incidentally, the use of shock absorbers does not appear to be as extended as was the case last year. The practice of attaching the under spring member beneath the axles steadily is becoming more popular, the method serving as a material aid in lowering the chassis.

The tendency toward the elimination of construction which may possibly permit the development of rattles at some future time in the life of the car is well reflected in the increasing adoption of twin expanding brakes. Obviously, the construction serves another end that is quite as important in that it affords excellent protection for this very vital part of a car.

LATEST MODELS REVEAL MANY EQUIPMENT IMPROVEMENTS.

An important part of the equipment of practically every car that hitherto has been passed over with an extreme degree of lightness by the average designer at last appears to have become the subject of serious thought, in the provision of adequately protected and noiseless speedometer drives. From a noticeable number of cars, the more or less noisy and unprotected star wheel has been eliminated and in its place there has been substituted a fully enclosed drive incorporated in the wheel hub. In several other cases, front wheel drive for the speedometer has been done away with and a place for the driving mechanism found on the propeller shaft.

The most noticeable improvemnt that has been made in equipment accessories that the forthcoming shows will reveal is the veritable landslide to the "one-man" top. The old-style two- and three-man top, to continue the analogy, rapidly is giving away to the more up-to-date covering which can be raised or lowered by one person.

These are the things that stand up bold and black—that cast their shadows ahead of them—and indicate to those who have an eye to see, what may be expected in the light of coming seasons. They indicate a vast and wonderful improvement, but what is far more important, they hold the promise of what the future is to bring forth. Other improvements than those briefly listed herewith have been made, it is true, but their delineation is best left to a more careful survey of just what the shows will reveal—a more searching examination of the little touches of finesse that serve either as distinguishing marks well known or as individualities destined to become better known.

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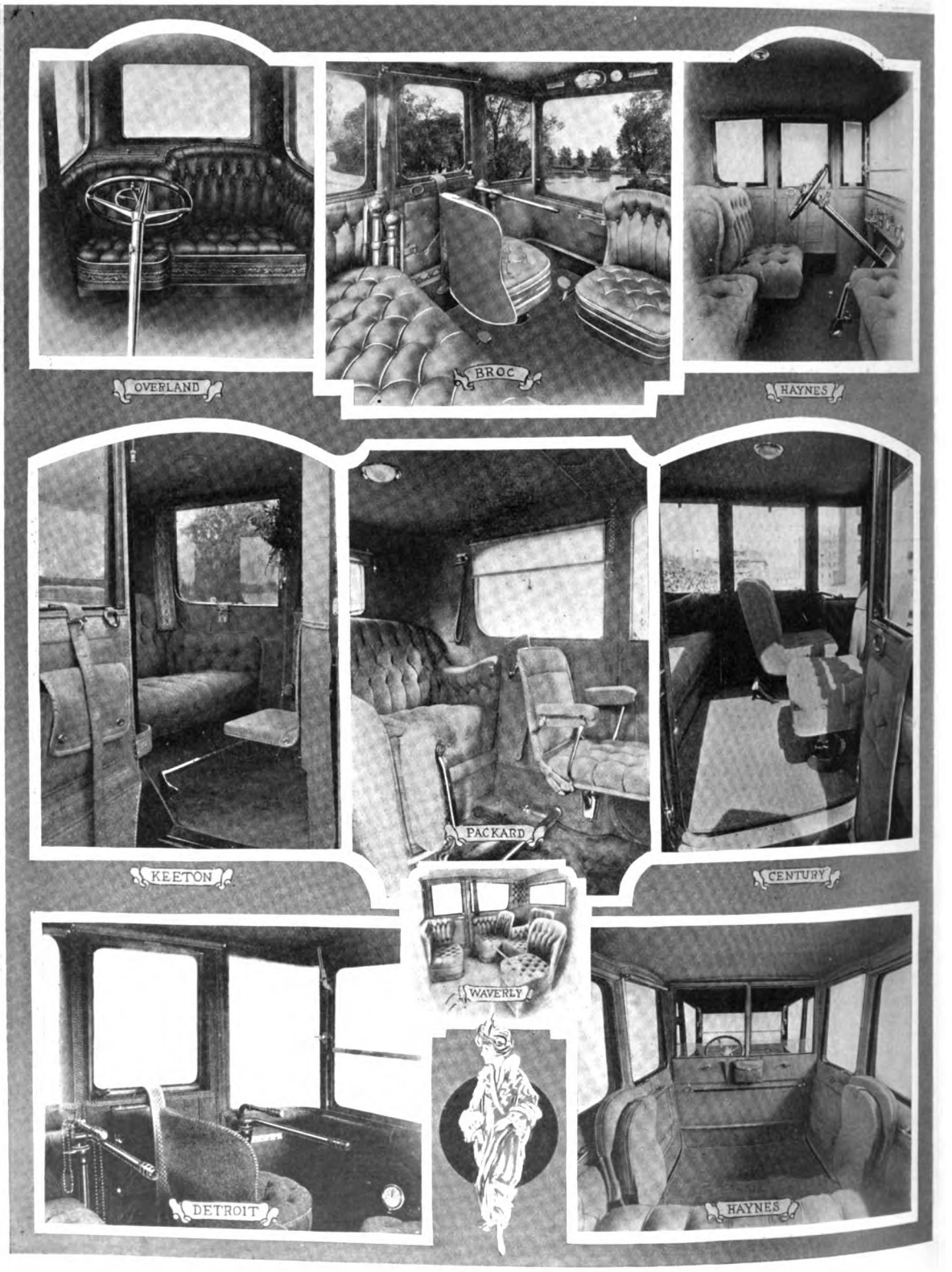
ABBOTT-DETROIT
ALLEN
APPERSON
†ARGO ELEC.
AUBURN
†AUSTIN
BAKER ELEC.
†BORLAND ELEC.
†BROC ELEC.
BUICK
*BRISCOE
CADILLAC
*CAMERON
CHANDLER
†CENTURY ELEC.
CORNELIAN
CARTERCAR
CASE
CHALMERS
†CHICAGO ELEC.
COLE
†COLBY
†CROW
DAVIS
DETROIT ELEC.
*EMPIRE
FIAT
FRANKLIN
GARFORD
GREAT WESTERN
*HAVERS
HAYNES
HENDERSON
HERRESHOFF
HUDSON
HUPMOBILE
IMPERIAL
JACKSON
JEFFERY
KISSEL
KLINE
KING
KEETON
LOCOMOBILE
†LAMBERT
†LEXINGTON
†LOMAX
LOZIER
LYONS-KNIGHT
McFARLAN
†McCORD
McINTYRE
MARION
MARMON
MAXWELL
MERCER
METZ
MITCHELL
MOLINE-KNIGHT
MOON
*MONDEX-MAGIC
NATIONAL
NORWALK
OAKLAND
OHIO
OHIO ELEC.
OLDSMOBILE
OVERLAND
PACKARD
*PAIGE-DETROIT
PALMER-SINGER
PARTIN-PALMER
PATHFINDER
PEERLESS
PIERCE-ARROW
PREMIER
PULLMAN
RAUCH & LANG ELEC.
REGAL
REO
†STANDARD ELEC.
STEARNS
SPEEDWELL
STEVENS-DURYEA
STUDEBAKER
STUTZ
*TWOMBLY
VELIE
VULCAN
†VOITURETTE
*VAUGHAN
*WARD ELEC.
WAVERLEY ELEC.
WILLYS-KNIGHT
WINTON
WHITE
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LUXURIOUSNESS DISCLOSED WHEN CLOSED CARS ARE THROWN OPEN



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Looking Searchingly Into the 1914 C

Big Things, and Little, That Will Be Revealed by the New Y and Chicago Shows—More of Real Novelty than for Seve Years, Some of It in Unexpected Places and of Vital Nat

REFURBISHMENT OF BODIES

From a small beginning that can be traced without any trouble to sources beyond the seas, the streamline type of body, which a year ago was practically unknown in American markets, has within the year gone by become of tremendous importance. The external appearance of the scores of cars that are to be uncovered at the forthcoming National shows in New York and Chicago, has changed out of all semblance to the cars of yesteryear—straight-line creations for the most part which gave evidence of a mighty striving for a more or less chimerical blended effect that eluded all but a very few of the more wary designers. The new cars are different and they show it in every line. In point of fact, there is a far greater difference between the car of 1914 and the car of 1913 than there was between last year's products and those of two years ago.

"Cleanness" of Streamline Bodies.

The new cars have an unparalleled appearance of "cleanness"; they give the impression of the finely kept, beautifully tapering fingers of the refined and well-groomed belle by comparison with their predecessors, which, to continue the same sort of simile, suggested rather stubby, ill-kept digits to which hangnails gave an unsightly appearance—and caused more or less pain. They have snipped all the hangnails from the new cars; they have cleaned them up; smoothed them down; and rubbed them over with something more than a mere veneer of beauty. The beauty is more than skin deep; it's bone deep, for the very bones of the cars have been made over and they don't show through the way they did, not so very long ago.

The adoption of a totally new type of body quite naturally requires some sort of a start, and that start was made when the V-shaped radiator that suggested the entering wedge principle that the coming year will make so common. From the pointed cooler it was but a tiny step to the tapered hood; and from the tapered hood grew the concave skuttle; and so on back through the whole of the body the refining process has been carried on until at present the streamline body is an accomplished fact; and, be it added, in parenthesis, some of the newer creations quite easily may make the foreign body designer, who generally is credited with the idea, turn a beautiful shade of pale green with envy.

Most makers have adopted the streamline principle whole-heartedly, and some of them have gone a little further; but it cannot be said with any degree of truth that any have transgressed the line that distinguishes pure freaks from strictly utilitarian types. Without doubt, the same motive has urged each—to increase the comfort of those who ride in the cars and to increase the sightliness of the cars themselves.

The Clearing Away of Side Lamps.

Among the more pronounced types of streamline bodies, the new six-cylinder National—it is the first six-cylinder brother the "four" Nationals have had—probably is as good an example as can be found; the absolute "cleanness" of the lines literally compels attention. The things that have marred other bodies are simply not there. From the stem to the stern the lines are unbroken. They suggest the long, lean greyhound. There are no outside projections. Even the side lamps are gone; and the windshield has been reduced in size until it presents not an inch of surface that is not necessary.

The new Pullman light "six" is another that is a really excellent example of streamline designing. In this case the tapered hood is even more pronounced than is the case in the National; one marked difference between the two is that the Pullman body is quite a little higher than is the National. But the car that suggests the entering wedge more than does any other is the Vaughan, and this one, too, is a brand new "six." Instead of being of the usual width, the Vaughan radiator is considerably narrower than standard and the engine hood both slopes and tapers backward to blend with the lines of the concave skuttle.

The elimination of side lamps has had a pronounced effect in heightening the smooth external appearance of the new cars. Winton, Chalmers, Hudson, Reo, National, Pullman, and a whole l no longer have even the littl glass set flush with the dash th served for side lamps. Instea lamps are made to do double d Chalmers, for instance, and in others, small auxiliary bulbs are to the big ones in the head lam bulbs being used for city drivi larger ones for touring where a light is needed. In others, nc son and Reo, for example, a si connects the two headlamp bu tiple for full light and in seri driving. When the bulbs are in consume but a fraction of the sumed when they are in multi light is proportionately decreas little Hupmobile coupe the smaller lamps atop the large o is familiar, and though Pierce gineers have not eliminated they have found a new place fo lamps. Instead of being on br are built right into the fender least important advantage of th tion is that it permits better of curves in the roadway than d further back and at the same tim are better protected.

Return of the Moulded Mu

The casting out of side lamps radical difference in appearar greater difference has been m widespread adoption of the moulded fender. In the concrete, fender is not new, for it was ago on the Garford, for one, long dead Pope-Toledo, for an what a difference there is betwe hearted doming of the old-time well-formed guards of the new is difficult to say who started which has been taken up so ra mers and Lozier and Hudson a Duryea and a number of others up moulded fenders as a logic ment over the older patterns.

In some cases the fenders ar more than one piece, and in of which the Oakland and th

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and the Studebaker are good examples, even the under bead is moulded in place. Obviously the construction serves to strengthen the fenders quite as much as it does to enhance appearance and to add protection. Incidentally, rear fenders now are reaching further around the tires than they have; the straight rearward extension is passing out rapidly. Take the Jackson and the McFarlan and the Cole and the Pathfinder, for instance, to say nothing of the Keeton and the Mitchell.

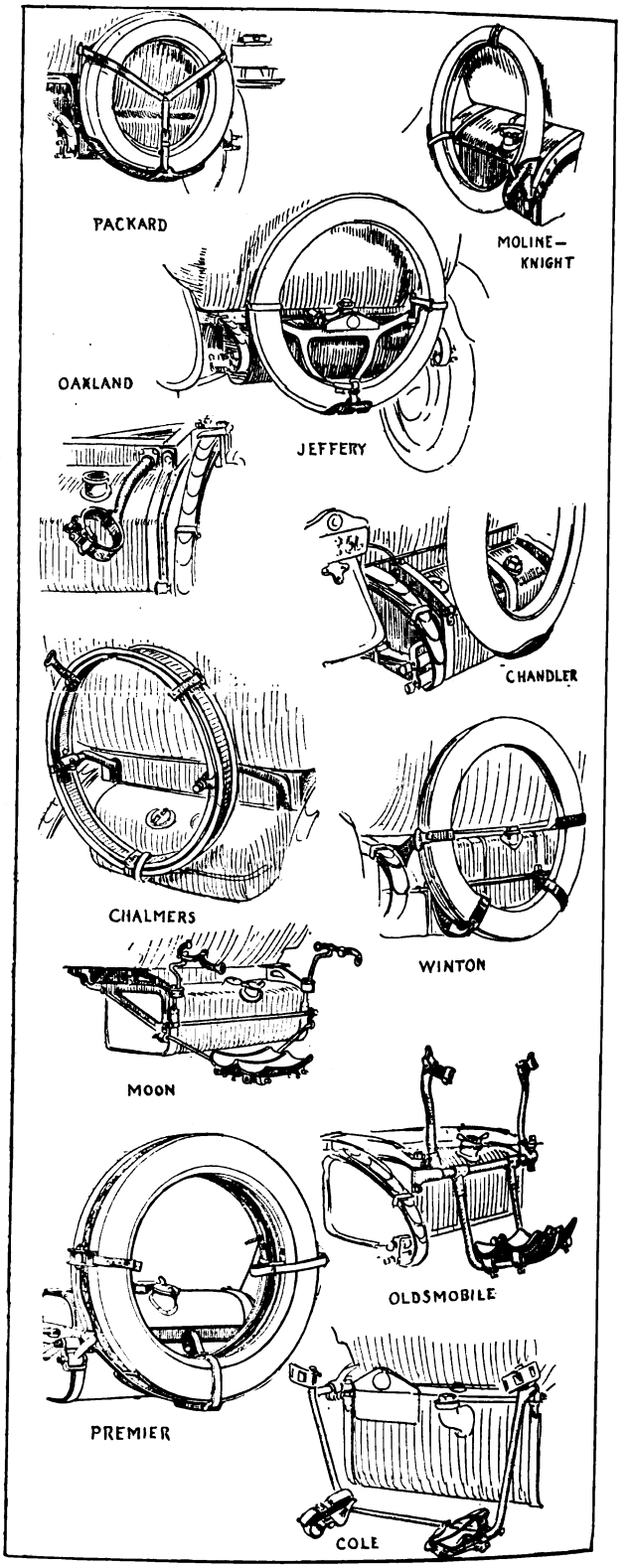
Wider Doors of Full U-Shape.

Still another thing that has a great big effect in altering the appearance of the cars that will be at the shows is the almost complete alteration in the shape of doors that has come about during the year. Doors as a rule are considerably wider than they have been in the past, and for the most part they are of the full U-shape; the point is made plain by the accompanying pictures of Keeton, White, Mitchell, National, McFarlan, Jackson and Cole cars. The flowery lines that served little purpose, in other words, have been eliminated. Latches and hinges long since have disappeared, of course. The Packard company has adopted a new type of latch that is a little different from anything else of its kind. It is styled a safety latch and is illustrated herewith. When the handle is turned the lock comes against a little catch which necessitates that the handle be turned again. Thus, even if the door is not securely latched it cannot swing open.

Ingenuity Revealed in Tire Carriers.

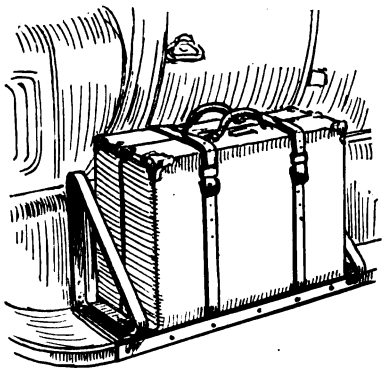
Spare tires, which last year gave evidence of moving backward off the running boards, now have moved backward in earnest and assumed positions of comparative obscurity behind the tonneau. The new position has required the development of new carriers, of course, and designers have taken advantage of the opportunity to exercise their ingenuity in devising holders that will not only hold the tires but will do so with absolute security and, for the most part, in such a way that the weight comes on the rim instead of on the tire.

Generally, the attachments are fastened directly to the chassis, the Packard, Moline, Chandler, Jeffery, Oakland and Premier being good examples. In the Oldsmobile the carrier is formed of tubing attached to rear extensions of the side frame members and in the Moon the same supports serve for both fuel tank and tires. The Chalmers carrier is different from any of the others in that the spare rims are held in place by clamps operated by means of the regular demountable rim wrench. Quite a few of



DIVERSITY IN REAR TIRE CARRIERS AND FUEL TANKS

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CHANDLER LUGGAGE CARRIER

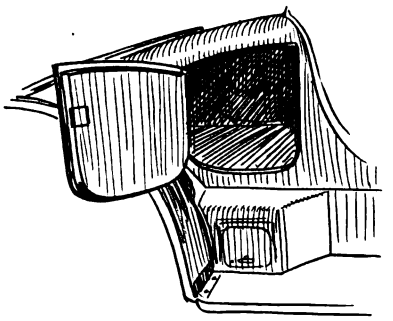
the new tire supports, as the Chandler, for instance, serve as very effectual protectors for the fuel tank.

In the new crop of cars, the disposition of tools and spare parts presents no such problem as it has presented in the past, for even though the running board no longer is looked upon as a perfectly legitimate resting place for sundry boxes and carry-alls, other spaces have become available. Due to the general shift of gasolene tanks from under the front seat to somewhat more conspicuous places at the back, or in the cowl, the space under the driver now houses the things that once were put into running board boxes. The Marmon makers, however, continue to exploit their running board suitcase carrier, though, strictly speaking, it is more on or in the front fender than on the running board, and hence it is quite out of the way. Oakland makers have attacked the tool disposition problem in a quite logical way by locating a commodious cupboard under the deep skuttle, where it is at once inconspicuous and out of the way. In a number of other cars, including National and Stearns, Stevens-Duryea and White, deep, well-hidden lockers are incorporated beneath the chassis and, opening onto the running boards, where things can be spread out if necessary with plenty of room to work.

Cowlboards Continue to Increase.

Inside bodies, the adoption of cowlboards for the mounting of control elements, the various lighting and starting switches, oil gauges and what not, grows apace. The movement, in fact, now has become a very general one, since its worth has come to be realized. The tendency to group control elements also is more pronounced than it has been, the Pierce-Arrow arrangement, for instance, being typical. In the Hudson and the National, too, elements have been grouped so that a single light serves to illuminate all. In the Oldsmobile arrangement, the devices are placed rather further back than they are in the others, by way of affording them better protection from the elements, and the Stearns dash is in marked contrast to the others because of its simplicity.

Control elements that are not placed on the cowlboard gradually are finding a place on the steering column itself, though no other makers have gone to the length of the Packard company in placing all controls on the column. Carburetter adjustments at the

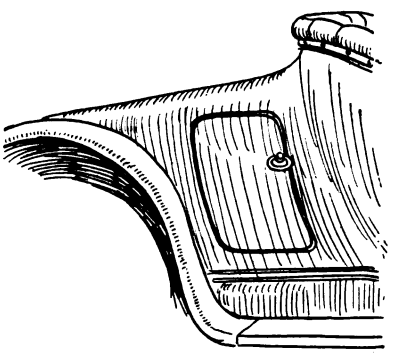


PACKARD STORAGE SPACE

operator's finger ends are much more common than has been the case in the past, a number of makers having adopted them.

Majority Have Left Side Control.

The veritable landslide to left-side steering with center control already has been



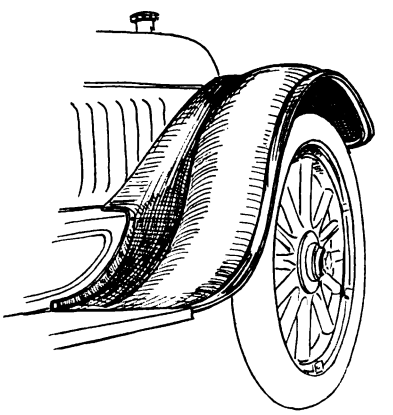
OAKLAND LUGGAGE CARRIER

remarked—the movement, in fact, undoubtedly is one of the most pronounced of all the features that go to distinguish the new cars from the old. Last year the trend toward such construction foretold the coming landslide, though it is doubtful if any expected that the movement would be so nearly universal. Of those that always have been driven from the right side, Jeffery, Stearns, Oakland, Regal, Apperson, Hudson, Franklin, Pathfinder, Buick, Chalmers, Winton, Abbott-Detroit, Marmon and a number of others now are controlled from the left side. Some few makers—such, for instance, as Pierce-Arrow, Mercer, Oldsmobile and Stutz and a few others—still adhere to right-side control, though by far the majority have switched. Locomobile and Peerless, however, offer the option of either right or left control, as do one or two others. Cadillac, too, still is driven from the right side and, by way of facilitating entrance to the front compartment from the left side, the makers have adopted an ingenious type of steering wheel that can be folded out of the way; at the same time, the front cushion "opens up," so to speak, leaving the entrance quite clear.

Few Alterations in Upholstery.

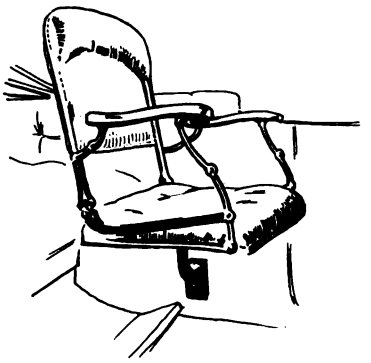
Regarding upholstery, makers would seem to have reached the limit in depth, or thickness, and practically without exception the 10-inch cushion that was virtually introduced two years ago now is standard. Some makers, it is true, have raised the ante, so to speak, but few have seen fit to worry along with anything thinner and less resilient. With but one noteworthy exception—the Stearns company—the style of cushions remains much the same, though in the main better materials now are being used than have been used in years gone by. The Stearns upholstery is distinctly different from anything else of its kind and has been chosen for utilitarian reasons as well as for purely esthetic ones. Instead of following the standard practice and locating the buttons rather close together, Stearns designers have used about one-quarter the number of buttons and have spaced them proportionately further apart. The result is that there are considerably fewer interstices for the collection of dust and dirt and, it would seem, wear is reduced because there are fewer spots which rise above the indentations made by the buttons. At the same time, the rear seat is divided in the center by a roll arm rest and similar roll arm rests are provided at either side of both front and rear compartments.

Due perhaps to a carrying out of the entering wedge principle, though more likely to an honest endeavor to increase the com-



HUDSON MOULDED FENDER

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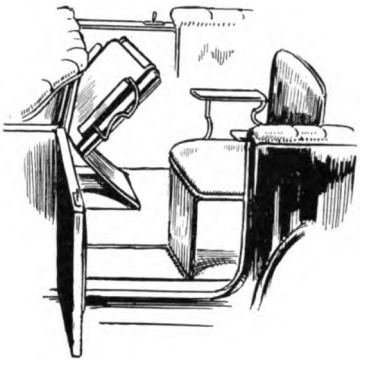
STEARNS TONNEAU CHAIR

fort of passengers, the rear seats of the new cars are generally wider than those in their predecessors. Despite the improvement in other directions, however, comparatively little attention has been paid the necessity for providing adequate and comfortable auxiliary seats in seven-passenger cars. The seats are, for the most part, uncomfortable, to express the matter in plain language. Yet a few makers have attempted to improve the condition of those who sit in them—and those who sit behind them. Stearns seats, for instance, are full-sized and are fitted with proper arm rests. When they are folded they offer little obstruction. The same may be said of the Kissel seats. In the case of the new Hudson, the designers have adopted a method which makes use of a couple of small tracks on the tonneau floor upon which the auxiliary seats rest and upon which they slide close up to the back of the front seat, quite out of the way, when they are not in use. Chalmers seats, too, fold out of the way, close to the back of the front seats, and partly into a well in the tonneau floor. A noteworthy improvement that has been made by Jeffery and Imperial and a number of others is embraced in the addition of leather facing to the back of the front seats by way of preserving the finish.



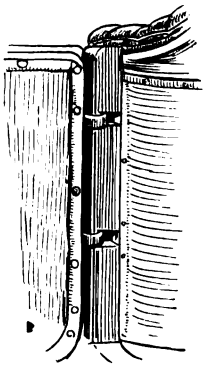
STEARNS AUXILIARY SEAT

One of the more important developments of the year—and it is a development that has direct bearing on the comfort of those who ride—is the quick springing up of that



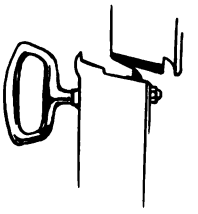
CHALMERS FOLDING SEAT

type of small convertible body which may be one minute a completely enclosed coupe in which the occupants can be as snug as the proverbial bug, and the next minute a



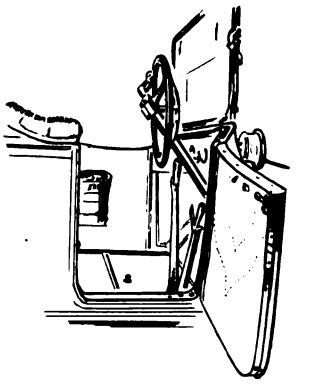
JEFFERY INVISIBLE HINGE

pretty roadster as wide open as all outdoors. Some makers style them convertible coupe, some call 'em coupelette, but most of all they are styled cabriolet, and



PACKARD LATCH

that seems to be the term that is most favored. They may be had on the smallest four-cylinder chassis or the largest six-cylinder one, the makers who produce them including such well -known names as Oakland, Paige-Detroit, Stevens-Duryea, Hudson, Keeton and Studebaker and the prices

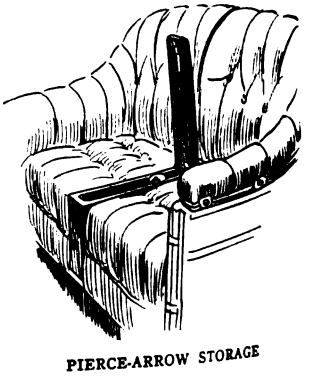


CADILLAC TILTING WHEEL

range from $1,950 for the Studebaker and Hudson (both "sixes") to $5,000 for the Stevens-Duryea (also a "six," of course).

Among the more aristocratic closed bodies—the big limousines, the Berline limousines, the Sedans, the landaulets and the smaller "sure enough" coupes—the changes that have been made are not as pronounced as are those that have been made in the open bodies, though the refining influence of the streamline tendency is plainly apparent in most of them. Probably the most pronounced difference between the new and the old lies in the general smoothing of angles and the rounding of corners that has been offered. The arched roof that belonged to the Pierce-Arrow people by right of prior discovery, so to speak, has been quite widely adopted by other makers, and the rounded roof, sloping to the front, is much more general now than ever before.

Pierce-Arrow and Packard and Peerless and Stevens-Duryea always have been noted for the beauty of their enclosed bodies, but the Peerless company at least, and very probably all the others, will uncover genuine surprises in the way of luxurious appointments. One interesting little feature of the Stevens-Duryea models that serves as an indication of the thoughtful manner in which their design has been worked out



PIERCE-ARROW STORAGE

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is embraced in the addition of tiny rain-conveying moldings on the roof to divert the rain that ordinarily would drop, unwelcome, down the necks of those who enter the car in a storm.

The Peerless company is to have on view what is styled a "Salon-Sedan" that is promised will be the very last word in luxurious appointments. There are no seats of the standard type in the car; thickly upholstered mahogany chairs take their place. The fittings are to be dark mahogany and ivory cleverly blended together; all the fittings, it is said, have been especially imported for this particular body.

MOTOR DEVELOPMENTS

Motor construction has not undergone any very great change during the year gone by, though the refinements and improvements that have been made cannot be denied and make plain the universal tendency toward higher efficiency—which means, in the fewest possible number of words, higher speed. The increase in the number of motors having bores of three and a fraction inches and strokes of five inches or more is one of the very pronounced tendencies of the time, and a tendency which serves to emphasize the fact that the small bore high speed engine bids fair to be the engine of the future. Although there has not been any remarkable falling away of those who adhere to the larger bore somewhat shorter stroke motor, the newer type of faster running machine undoubtedly has made such a noteworthy advance that it is worthy of a good deal more than passing notice. It would seem to be only a matter of time, before these larger motors finally give way to the more modern ones.

Smaller Bores and Higher Speeds.

Of the new models that make their first appearance on any stage, by far the greater number of them are fitted with small-bore, high-speed motors, the newer preference in the matter of cylinder dimensions ranging from 3⅛ inches bore and 5 inches stroke to 3⅞ inches bore and 5½ inches stroke. Incidentally, practically all of them are "sixes." Thus, for instance, in the 3⅛ x 5-inch class, the Chandler, which is a "six," and the Vulcan, which is a "four"—both of them are brand new—stand as excellent exponents. In the next larger size —3½ x 5 inches—there are the Hudson and the Oakland, which are "sixes," and the Cartercar, which is a "four," all three being new products added within the year to the already long list of motors in this class. The 3¾ x 5-inch class has won a convert in the new Buick "six"; in the 3⅞ x 5-inch class there is the King.

As a rule, bores slightly larger than 3¼ inches are the most popular, the 3¾-inch piston being in the majority. Thus, for instance, there is the White, which has a stroke of 5⅛ inches. Among the newcomers in the six-cylinder field, Jeffery, Auburn, Velie, Abbott-Detroit, Pullman, Marion and Moon all have 5¼-inch strokes, the bore being the same in each case and measuring 3¾ inches. The next larger class, which includes those cars having cylinders measuring 3¾ x 5½ inches—a still greater ratio in bore and stroke—Imperial, National, and Apperson, all are new "sixes," and the McCord is a new "four." All these, of course, are in addition to the makes that already exploit cylinder dimensions in the various classes listed.

Block Cast Motors Multiplying.

The 5½-inch stroke appears to strike the limit of popular fancy, though there are one or two examples where this has been exceeded in the production of new motors. White, for instance, has increased the stroke of its larger four-cylinder motor from 5¾ inches to 6⅜ inches and in the new Lozier "six" the stroke is set down as 6½ inches. Above that limit, however, there are very few motors, the Mitchell and the Austin, with their 7-inch strokes, to say nothing of the Peerless, which has a correspondingly large bore, and the Fiat, being practically the only exponents.

Coincident with the development of the new light "sixes," there has become apparent a very pronounced tendency to cast all six-cylinders in a single block, practice which a year ago was confined to comparatively few makers. Now, however, that is changed, and the block-casting of six-cylinders is the rule rather than the exception. Nor is the method confined to motors which have their valves all on the same side. Makers of T-head and overhead valve motors as well, now are essaying the task, both the Apperson and the McFarlan being among the newer "sixes" with T-head cylinders. In the overhead valve class, the new Premier motor is one of the very few sixes that has block-cast cylinders. Among the more conventional types of motors, National, Ohio, Keeton and Oakland—all are among the new ones that have cylinders in one block instead of two blocks or three.

Exit the Cup-Headed Piston.

Block-casting of cylinders can be expected to lighten construction to a certain extent, of course, and in other directions, too, designers have sought, with a great deal of success to reduce weight. The lightening of reciprocating parts has been going on for some time, though not yet has it reached its limit. During the past year there has come a tendency to get along with a smaller number of piston rings than have been used in the past, the Peerless engine, for instance, being one of a number in which three rings now take the place of four; friction on the cylinder walls is reduced as a matter of course.

At the same time, theory with regard to the peculiar advantages of the cupped or domed piston would seem to have received quite a jolt, for several makers who heretofore have had pistons remarkable chiefly for the absence of flat tops, have changed over and now draw especial attention to the fact that their pistons hereafter are to have plain, flat tops. Studebaker is one and Mitchell is another, both makers having come to the conclusion that such advantages as appear possible with combustion chambers as nearly spherical as possible, pale before the discouraging effect that flat, polished surfaces have on the accumulation of deposits which normally go under the name of carbon. It is pointed out, too, that the flat tops greatly facilitate the removal of such accumulations. At the other end of the street, so to speak, there is the Moline-Knight engine, which probably has a rounder combustion chamber than has any other motor. Not only are the tops of the cylinder deeply recessed, as is fairly common in Knight motors, but the effect has been heightened by deeply cupped pistons.

More Removable Cylinder Heads.

Any mention of Knight motors naturally brings to mind detachable cylinder heads, and examination of the newer motors that are to be uncovered at the forthcoming shows brings to light that the practice of making cylinder heads separate and afterward bolting them in place certainly gives evidence of increasing in popularity. The Moline-Knight has detachable heads, quite as a matter of course, as have a number of the smaller and better known light four-cylinder motors that have been on the market for some time. What gives emphasis to the movement, however, is the appearance of four brand new motors which feature construction of the kind. Thus, for instance,

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both the Partin-Palmer, which is a "four" that will make its debut, and the Weidely-Premier, which is a "six" of a new type, both have detachable cylinder heads. What is stranger still, however, is that both motors are of the overhead valve type. The third new "six" which has a detachable head is the Oakland, though in this case the cylinders are of the conventional L-head type, and the fourth is the Lozier "four."

Weidely Reveals Radical Construction.

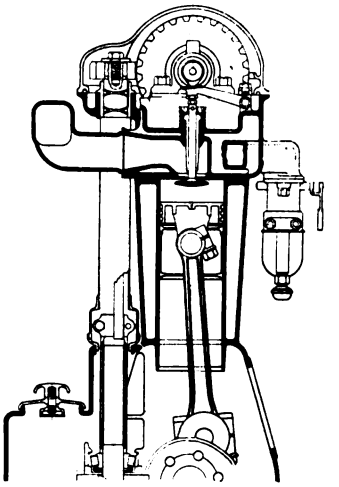
Another peculiarity of motor equipment, rather than of motor construction, that the year has brought forth, is the apparently growing practice of makers to offer the choice of two motors in a standard chassis. This has been done by way of catering to the individual requirements of the purchaser, or to his whims. The makers of Lambert cars offer the option of Continental or Rutenber motors, the dimensions differing by a very slight amount. In the Mitchell cars the purchaser may have his choice only insofar as stroke is concerned, the stroke being either six or seven inches, and in the McFarlan, either 4- or 4½-inch bore may be chosen, the stroke being six inches in either case.

Among motors that are not of the conventional poppet-valve type, the Weidely motor that is to be exhibited for the first time by the Premier company is the newest thing that will turn a wheel at the shows. The motor in the abstract is of the poppet-valve type, but it cannot by any stretch of the imagination be styled conventional; except that it has six pistons and six cylinders and 12 valves, there is practically no point of similarity between it and any other motor. But even the valves and the pistons are different from anything else of their kind—and the same can be said of the cylinders. In only one respect is it exactly like other automobile motors—it operates on the four-cycle principle. Needless to add, there is no trace of former Premier practice forward of the flywheel, and back of the flywheel the unit construction of the motor, clutch and gearset also is new.

Crankcase and Cylinders Cast Together.

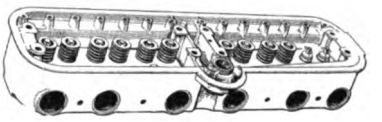
As already has been made plain, the six-cylinders are cast in a block with the cylinder head detachable. But in casting the cylinders together, the designer went still further and included the whole crankcase as well, so that only a flat plate is needed to close the bottom of the oil sump. Even the water pipes have been eliminated and the radiator attaches directly to the motor without any intervening rubber connections.

Properly speaking, there are no valve cages, the valves seating directly in the cylinder heads; they are offset, however, so that in the event of breakage they cannot drop into the cylinders. No rocker arms or



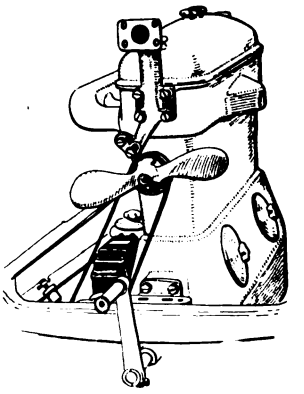
PREMIER SENSATIONAL MOTOR

tappets are used, the single camshaft being directly over the valves, which are operated through finger mechanism. Naturally, the finger mechanism eliminates side thrust on



WEIDELY CYLINDER HEAD

the valve stems. The lubrication system oils the valve stems so thoroughly that special means are provided to prevent oil working down into the cylinders.



WEIDELY MOTOR FAN

The cylinder head is held in place by 16 half-inch cap screws, and these screws serve also to hold the camshaft bearings. The whole of the valve mechanism is covered by an aluminum housing held in place by four hand wheels. Between the cylinder head and the cylinders there is a copper asbestos gasket.

The lubrication system of the motor is one of the its most interesting features. The lower part of the crankcase holds about three gallons of oil. The plate which forms the bottom of the sump is an aluminum casting and is ribbed to facilitate cooling of the oil. Two deepening troughs in this plate lead from the ends toward the center, and lead the oil to a little pocket on the right side of the case, near its center, under the oil pump, which is bolted to the crankcase.

Providing for Valve Lubrication.

A spiral gear in the middle of the crankshaft drives a similar gear on the vertical shaft at the left side of the motor, and this, in turn, drives the camshaft through another pair of spiral gears. The oil pump is driven from the bottom of this shaft. It is of the gear type, and a large strainer precludes the entrance of dirt from the sump.

At the top of the pump there is a rotating sleeve which distributes the oil. One-seventh of the oil is pumped to a vertical passage, and one-seventh to each splash trough; all the remainder goes through a passage cored in the bottom plate. Each trough has a hollow leg that is bolted to a finished pad on the cored plate, and the oil is thus brought to the splash troughs without pipe connections. A drilled plug is put in each trough where the oil emerges, so the system is always under pressure, and the front trough is not robbed when the car mounts a hill.

Through the camshaft for its entire length there is a hole three-eighths of an inch in diameter which carries oil to the cams and the end bearings. The cored passage from the pump leads to the middle bearings, one of which has a groove extending around its inner periphery. A hole drilled in the camshaft registers with this groove. A small hole is drilled through the back of each cam, so a stream of oil squirts out over each cam finger every revolution. The end bearings are capped, so that the oil tends to flow out of the shaft at each end and back through the bearings.

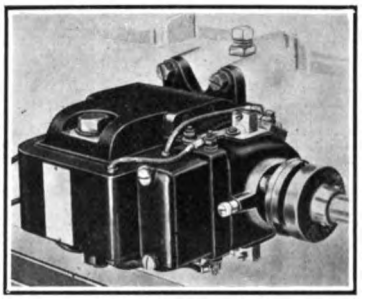
Overhead Gearing Runs in Oil Bath.

Surplus oil runs toward the center of the cylinder head and falls back to the crank case through a large cored hole. This has two openings from the cylinder head casting. A well is formed in the center of the head casting by the ribs for the two middle bearings of the camshaft, and in this well the driving gear comes. Oil from the bearings keeps this oil well filled and the gear

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runs in a constant bath. This also lubricates the upper bearing of the vertical shaft.

The oil falling back to the crank chamber strikes the gear in the middle of the crankshaft and fills as well two pockets over the two middle main bearings, next to the gear. The front and rear bearings are oiled by



MITCHELL LIGHTING DYNAMO

long troughs, 1½ inches deep, that run from the middle of the case on either side toward the ends.

"Crosshead" Pistons in Weidely Motor.

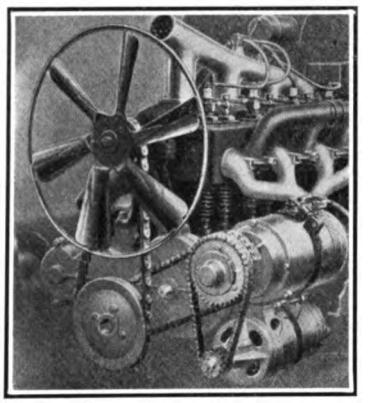
As the accompanying illustration makes plain, the pistons that are used are quite different from anything else of their kind. They are styled by their inventor, "crosshead pistons," and are constructed on the theory that the part serving as a guide and the part taking the pressure of the explosion should be separate. The piston head and ring grooves are formed as usual, but the skirt is not continuous with the grooved part, a slot of one-eighth inch or so intervening. The bosses are linked to the head by two crescent-shaped webs, and the skirt hangs on the bosses. The result is a piston which is ground cylindrical on the skirt, with a clearance of only .0015 of an inch. With this design, it is pointed out, no heat is transmitted from the head of the piston to the skirt, and the latter may be more closely fitted than is customary.

Next to the Weidely engine in point of newness and construction that is quite out of the ordinary, though basic principles of operation remain the same, is the Moline-Knight. As is the case with all Knight engines, the four cycles are carried on with the aid of reciprocating sleeves which encircle the pistons, though the similarity to other Knight engines ends here. Instead of having its four cylinders separately cast, or at least cast in pairs or triplets, the Moline-Knight has them all in a rigid block, the construction marking an era in American Knight engine building.

With the cylinders in a block, it has been comparatively simple for the designers to form both intake and exhaust manifolds in the same casting—which indicates another difference between the Moline and other Knight motors. Furthermore, the circulation of the cooling water is carried on by thermo siphonic action, which is another and a very important individuality of this particular motor. Still another distinctive feature lies in the adoption of force-feed lubrication entirely, splash having been eliminated. Through interconnection with the throttle lever, the quantity of oil fed to the bearings is properly proportioned to the requirements of the motor as determined by the power developed quite as much as by the speed of the crankshaft. One of the clever "wrinkles" of design lies in the use of a combined breather pipe, fan standard and oil filler, practice which gives evidence of becoming more general in other motors as well.

Magic Motor With Crescent Valves.

Somewhat like the Knight type of motor in that it uses sliding valves in place of the



OVERLAND ELECTRIC INSTALLATION

usual poppet members, the Mondex-Magic, which makes its first appearance, is another motor that differs radically from anything else of its kind. Briefly, the principle of operation requires the use of sliding crescent-shaped valves located for intake and exhaust on either side of each cylinder. The motor itself is not new, of course, but it has had no presentation " at court," so to speak.

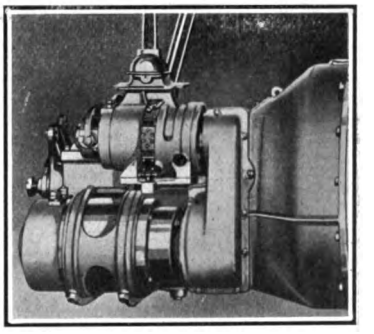
Also in the class with non-poppet valve machines, there is the Speedwell-Mead rotary-valve motor, which, since its first introduction at the last shows, has undergone a number of important alterations destined to improve its running and its appearance, though in the main it is unchanged. Thus, the valves have been fluted and new manifolds, very much neater and more efficient, have been adopted and several other minor changes made. Incidentally, the motor has superseded the Speedwell poppet valve type, which is discontinued.

As was to be expected, the methods of mounting and driving electric engine starting and electric lighting gear have undergone no little alteration tending toward standardization during the past year. The advance which such equipment has made must be apparent to even the most casual observer and it already has been remarked that several car makers who always have featured pneumatic devices have changed over to electrical euipment.

The past twelvemonth has afforded automobile engineers abundant opportunity for exercising their ingenuity in drawing up more substantial mountings than have been used in the past, and no little improvement is apparent. The trend toward the gearset location of starting units, if not pronounced, at least is quite perceptible, both Lozier and Mitchell having chosen such locations in preference to engine brackets. In the Mitchell, the lighting generator drive also has been revised, and the installation as it now stands makes for a not altogether common degree of accessibility combined with simplicity seldom excelled. The generator, as is shown by the accompanying picture, is bolted to the side of the engine crankcase, the drive being direct by short shaft to the timing gear train. The Chalmers starter is geared to the clutch shaft through a "silent" chain.

Mounting Starting Motors and Generators.

Another mounting which, though not new, offers easily recognizable advantages upon the score of accessibility, is the White. In this case the combined generator and starting motor is mounted on a special bracket at the side of the engine, to which it is attached through the intermediary of a short "silent" chain to the magneto shaft. The



LOZIER GEARSET STARTER

Overland company has adopted a somewhat unusual method of driving the lighting generator and connecting the starter, the method being best made plain with the aid of the accompanying picture.

The method of connecting the starting motor to the gasolene engine through the intermediary of gearing cut in the periphery of the flywheel continues to hold its own

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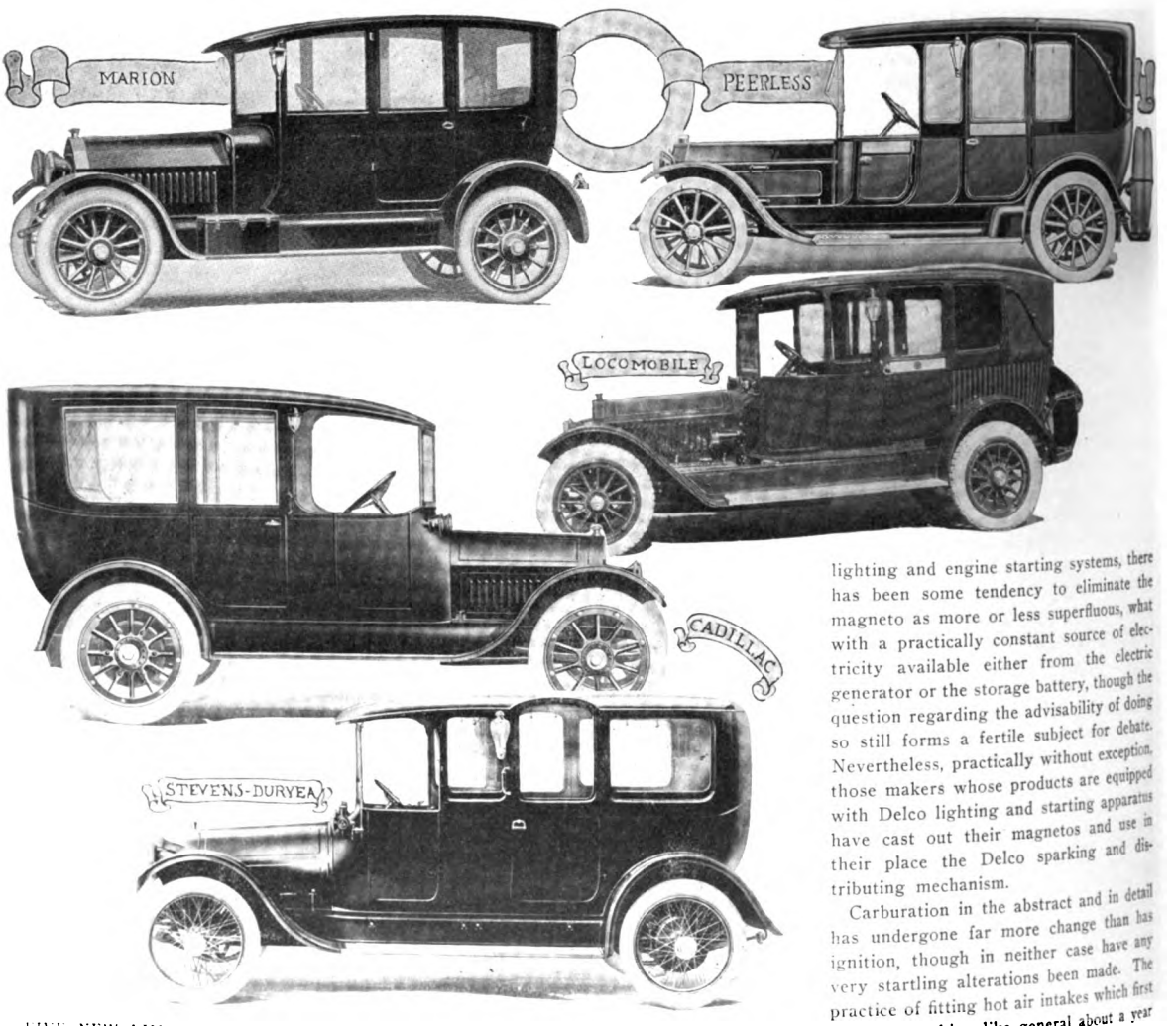
and in at least one case—that of the Abbott-Detroit—it has gained a convert. Another noticeable tendency which indicates a desire on the part of manufacturers to increase simplicity, is the substitution of ordinary indicators—something in the nature of a narrow or a plain pointer—for the meters that at first proved so plentiful. Studebaker, among others, has made the change. Cole equipment is unusual in that a quick-opening circuit breaker takes the place of the usual fuse. There is a marked tendency, too, to simplify wiring and to protect it to a greater extent than has been common, the method used in Marion cars serving as an excellent case in point. The wiring is fully protected by metallic tubing over its whole length and all the wires lead to a centralized junction box on the dash; at the same time, the wiring is attached not to the body but to the chassis, which permits of the removal of the body without the necessity for breaking the wires, which can be disconnected at the junction box.

IGNITION AND LUBRICATION

In connection with the modern gasolene automobile engine, there are few factors which have become standardized to the extent that the word applies to ignition and ignition devices, including the high-tention magneto, the wiring and the plugs. Thanks to the ingenuity and the indefatigable work of those who have to do with such things, the magneto has been brought to a high state of efficiency and it could not be expected that any great change would be made in it or in the method of adapting it to the requirements of the individual motor.

With the general adoption of electric lighting and engine starting systems, there has been some tendency to eliminate the magneto as more or less superfluous, what with a practically constant source of electricity available either from the electric generator or the storage battery, though the question regarding the advisability of doing so still forms a fertile subject for debate. Nevertheless, practically without exception, those makers whose products are equipped with Delco lighting and starting apparatus have cast out their magnetos and use in their place the Delco sparking and distributing mechanism.

Carburation in the abstract and in detail has undergone far more change than has ignition, though in neither case have any very startling alterations been made. The practice of fitting hot air intakes which first became anything like general about a year ago, now has become very much more general and there are very few makers who do not fit them as standard equipment; among those who have adopted them during the



FIVE NEW LIMOUSINES THAT EXHIBIT THE TENDENCY TOWARD CURVED ROOFS

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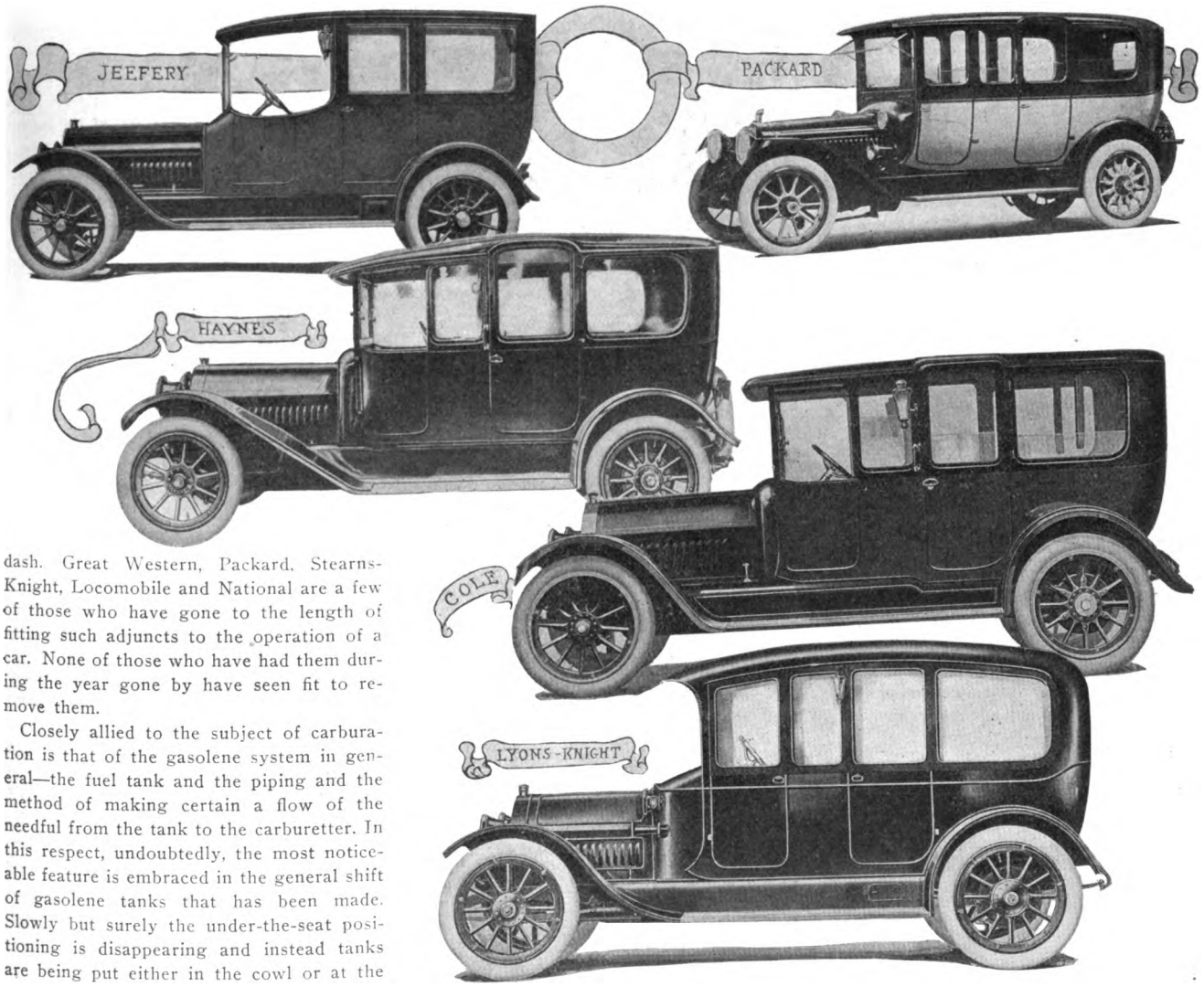
year are Kline and Winton. The fitting of water-jacketed manifolds also is becoming more common, Speedwell and Chalmers being among those who have made use of them for the first time this year. Cadillac engineers have adopted an ingenious intake heater of the electric type which serves to facilitate starting when the mercury flirts with the zero mark.

Increasing attention is being paid, too, to the desirability of providing means whereby the proportions of either gasolene or air, or both, can be varied from the driver's seat without the necessity for stopping either engine or car. Generally this requires nothing more than the addition of a tiny lever on the steering column or on the dash. Great Western, Packard, Stearns-Knight, Locomobile and National are a few of those who have gone to the length of fitting such adjuncts to the operation of a car. None of those who have had them during the year gone by have seen fit to remove them.

Closely allied to the subject of carburation is that of the gasolene system in general—the fuel tank and the piping and the method of making certain a flow of the needful from the tank to the carburetter. In this respect, undoubtedly, the most noticeable feature is embraced in the general shift of gasolene tanks that has been made. Slowly but surely the under-the-seat positioning is disappearing and instead tanks are being put either in the cowl or at the rear now, instead of under the front seat. Some of those who have chosen cowl locations are Studebaker, Ohio, McIntyre, Hudson, Krit and Allen. In the Hudson, the designers have taken an ingenious and obvious method of insuring against the surge of fuel causing leaks; they have provided the tank with what is technically known as a swash plate.

Obviously, where tanks are placed at the rear, pressure feed to the carburetter is necessary and whereas it was at one time comparatively common practice to obtain the necessary pressure by tapping the exhaust pipe and using a Lunkenheimer device, this method quickly is passing out of vogue. Instead, the majority of makers employ tiny plunger pumps.

Just as surely as pressure feed to the carburetter seems to be coming in, so is the employment of pressure feed lubrication methods increasing. The splash method which at one time was judged to be all-sufficing, despite the difficulty of controlling the emission of smoke with it, quickly is passing out and in its place there is coming either straight force-feed systems in which splash has been eliminated, or combined systems in which splash is relied upon only to lubricate the cylinder walls, the main bearings being fed direct. The practice of interconnecting throttle levers with the oil control mechanism is becoming more general and the place of the four—or six—large splash compartments beneath the connecting rod big end bearings is being taken by tiny troughs into which little scoops dip. The Lozier "six" system is a good example of the latter method, which, of course, first became prominent with the introduction of Knight motors. In the new Lozier "four" there is a unique method of causing the oil to circulate by contact with the flywheel. The Chandler is another that uses the individual trough system and the Marmon pressure system, of course, is



FIVE MORE NEW CLOSED CARS SHOWING TREND TOWARD ROUNDED CORNERS

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too well known to require lengthy explanation.

As a measure to obviate the possibility of smoke issuing from the exhaust pipe, regardless of the quantity of oil in the reservoir or the speed of the motor, quite a few makers have adopted the practice of fitting what is styled a "wiper" ring on the piston with a number of holes drilled beneath it through which the excess oil scraped down is permitted to flow back to the crankcase. Jeffery and Regal and Keeton and a number of others all have done this.

Another tendency, which as yet has not become very pronounced, is toward the elimination of the oil grooves that always have been deemed necessary. So far, the Moline-Knight company and one or two others are the only ones who have attempted anything along this line. Where such grooves are eliminated, the assumption is that the bearing will be literally "floated" upon a film of oil, which necessitates, of course, that the lubricant be applied under considerable pressure.

The cooling system of the modern car is another part which is not susceptible of a great deal of change, and hence not a great deal has been made. One or two makers whose water has been circulated by thermo-siphonic action — Keeton is one of them, for instance—have fitted pumps, but for the most part few excuses have been found to make changes. So far, no one has seen fit to desert water cooling for the field that is virtually dominated by the Franklin company, though one maker of air-cooled cars has adopted water cooling; that maker is the Cameron company, which company, by the way, has practically reconstructed its whole line of cars.

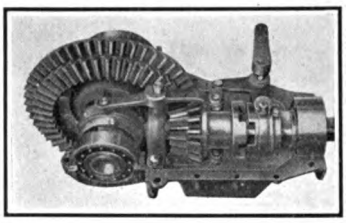
TRANSMISSION ELEMENTS

Among the various transmission elements that go to make the newer crop of cars complete, very little that is new is revealed in clutches and in clutch construction. All of the various types of clutches that have become familiar through years of use remain, the more prominent types being the cone, which is too widely used to permit of any listing of names, the disk, for which the same may be said; the contracting band, which is featured by Apperson and Haynes, and the internal expanding, which has as its sole exponent the Peerless company. Construction that is out of the ordinary is embodied in the Keeton clutch, however, for though the mechanism nominally is of the multiple disk type, each of the disks is coned so that the whole becomes virtually a cone-disk clutch.

Jeffery Leather Differential Marks Era.

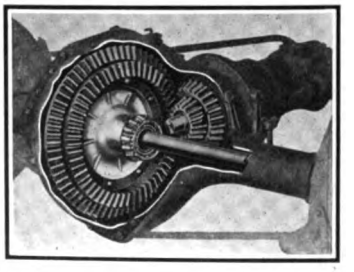
Between the clutch and the gearset it continues to be the practice to incorporate either one or two universal joints and for the most part these are of the conventional type. In the new Jeffery cars, however, the designers have taken a leaf out of foreign books and adopted the Daimler type of leather universal for the transmission of the engine power. Leather universals have been used before for magneto and pump drives and for other minor purposes, but so far as is known this is the first time that any American maker has indicated a sufficient measure of faith in the device to warrant his adopting it for such strenuous duties. The joint, which is illustrated herewith, is of the type used for many years in the Daimler 'buses that run about the streets of London, and has been adopted by the Jeffery company only after extensive tests which have demonstrated its ability not only to "stand up" but to perform its duties quietly and surely.

Although gearsets have not changed materially in construction—here and there designers have increased the diameter of shafts or substituted ball or roller bearings for plain ones and styled the improvement "detail refinement"—there is a well-



AUSTIN TWO-SPEED AXLE

defined tendency toward an increase in the popularity of the four forward speed mechanism in which the third speed corresponds to direct drive. In other words, the overstep "fourth" is gaining in favor in a man-



CADILLAC DOUBLE DRIVE

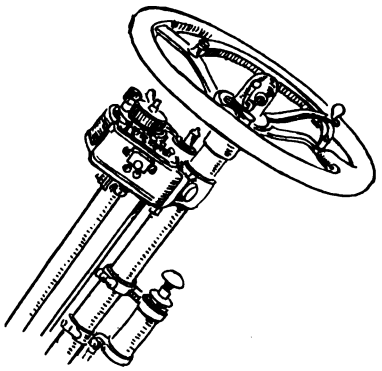
ner that is unmistakable, judging merely by the increasing number of makers who are using it. Abbott-Detroit and Keeton and Jeffery all have gearsets of the kind for the first time in their new models, the list including also the larger Hudson "six," the Lozier "four" (but not the "six"), the Pathfinder, the Winton and the Kissel. As a general rule, gearsets remain practically where they were, insofar as their position in the chassis is concerned, though in isolated cases makers have shifted them; the Stearns-Knight gearset, for instance, now is in a unit with the motor instead of being in a unit with the rear axle.

The conventional type of gearset is the selective type, of course, and there have been no changes worthy of mention made in control methods. Among the gearsets that are out of the ordinary, the Cameron mechanism is likely to attract attention because of its unusual features. Although it affords four forward speeds and the control is selective, every one of the four speeds is in effect a direct drive. The mystery is easily solved by a glimpse of the mechanism, which shows the gearset to be transverse of the propeller shaft instead of parallel to it, as is usual. Incidentally, the whole mechanism is carried on the rear axle, though the size of the casing is no indication of its contents. Lambert and Carter and Metz continue to be the leading friction transmission exponents, of course, and except for slight improvement here and there are as they always have been in the past.

Electric and Pneumatic Gear Shifters.

The newest thing in the way of gearsets and gearset control that the forthcoming shows will have to reveal quite obviously is the Vulcan electric gearshift that has been adopted by Haynes, and Pullman, and Norwalk, to say nothing of a couple of others whose products will not be exhibited either in New York or Chicago. Other than the Vulcan device, there is to be the Gray pneumatic gear shifter and engine starting system, which, though some time on the market, has not yet had a formal "coming out" party, so to speak, and therefore is not quite as familiar as the Vulcan, which made its first appearance at the last show in Boston on an S.G.V. chassis. The essential difference between the Gray and the Vulcan, of course, is that the one is electric and the other pneumatic, though in

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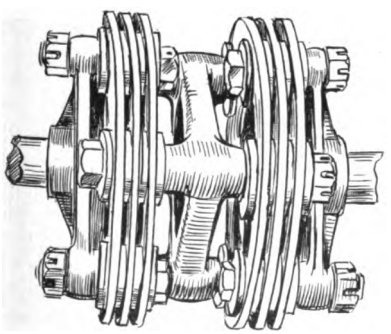
PACKARD COLUMN CONTROLS

the end their functions are the same. Both have steering column devices by which the operator can indicate the gear he intends to use in driving, when depression of the clutch pedal automatically shifts the gears without further fuss or feathers, through the medium of the apparatus that is securely hidden in the gearset, where it is out of sight and out of harm's way.

Back of the clutch and gearset and ahead of the rear axle there is not much, of course, that is susceptible of change, the propeller shaft that is almost universally solid through and through occupying the space in silent majesty with the Pierce-Arrow tubular shaft as the single exponent of its kind.

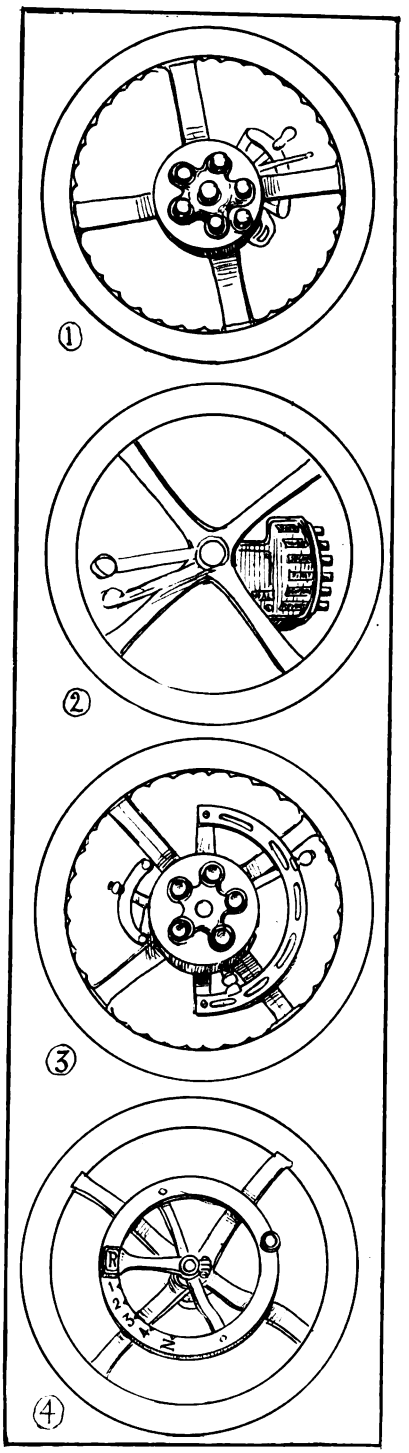
Where Radius Rods Have Vanished.

The tendency toward the elimination of radius members by causing the springs to take their place is even more pronounced than was the case last year, both Stearns-Knight and Winton being among the more prominent makers who within the year have made away with parts of the transmission elements heretofore considered well-nigh indispensable. In both cases the springs are solidly connected at the front and the drive is transmitted directly through them. The Winton makes use of a torsion arm which extends from the differential casing to a cross frame member, where it is flexibly connected. In the Chalmers the makers have adopted a somewhat unusual method of attaching the torque member to the chassis, the arrangement being best made plain with the aid of the accompanying picture, which shows the installation as it now is made. In the Hudson "little six," both torsion and radius members are missing, their functions being carried on by the springs.

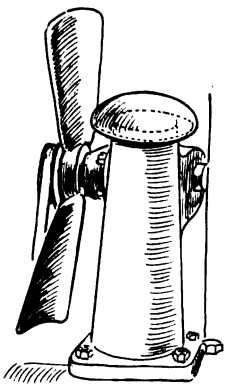


JEFFERY LEATHER UNIVERSAL

AUTOMATIC GEAR SHIFTERS



VULCAN ELECTRIC GEARSHIFT AS APPLIED TO (1) HAYNES, (2) NORWALK, (3) PULLMAN. (4) GRAY PNEUMATIC SHIFTER AS APPLIED TO McFARLAN

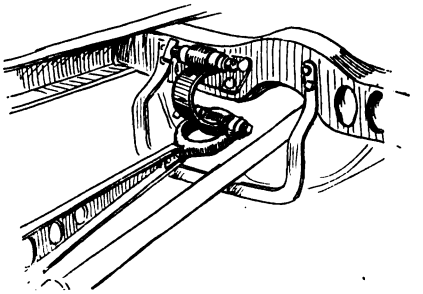


MOLINE BREATHER-BRACKET

Worm Drive Makes No Great Gain.

Contrary to what may be expressed as the general expectation, the worm drive has not made the advance that it was supposed it would make. As heretofore, the Lyons-Knight and the Willys-Knight, the latter being virtually the Edwards-Knight, continue to be about the only cars that have worm drive as standard equipment. In the Stearns-Knight, however, the makers have signified their intention of equipping with worm drive instead of the standard bevel drive when the purchaser so specifies, the alteration adding $100 to the list price of the car. Among the makers of poppet-valve cars, the Packard company is the only one that has made any serious attempt to eliminate the usual bevel gear drive. The combination worm-bevel gear that but lately has been adopted for all Packard products will make its first formal appearance at the shows.

The two-speed rear axle which last year had its only exponent in the Austin car, and then only as added equipment, this year has gained another convert in the Cadillac, which, as nearly everyone knows, has brought out an electrically controlled two-speed rear axle that will be standard equipment on all its future models. Incidentally,



CHALMERS TORSION HANGER

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the Austin company now has decided to make its two-speed rear axle standard equipment, and it will be fitted to all Austin cars hereafter. This axle, too, makes its first appearance in New York, though it was exhibited last year at the Chicago show.

Not a great deal of change has been made in rear axle casings, the Peerless as heretofore retaining its arched design and the Stearns its solid forging, these two being representative of their respective classes. In the case of the Franklin, which always has been noted for its light weight anyway, a considerable reduction in weight has been made by the substitution of an aluminum housing for the one in use in the past. The Cole, which uses Timken axles, has made a reduction in the same way, by the use of a nickel steel housing in place of previous construction.

REFINEMENT OF CHASSIS DETAILS

Among the various components that go to make up the chassis of the cars that are to be exhibited at the forthcoming shows—the running gear, that is, without the power plant and the transmission elements—springs and spring suspensions will show the refining hand of the engineer more than will any other parts. It is true that no really new spring suspensions have been evolved during the past year, but in the old ones many improvements have been made.

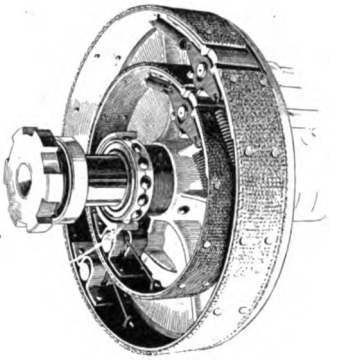
The most noticeable alteration is in the method of attaching the springs to the axles. Whereas only a few makers last year essayed the lowering of the chassis that comes from attaching the under member of the springs beneath the axles instead of over them, the list this year is much longer, and it contains names well known throughout the automobile industry. The Oldsmobile now has its rear springs hung beneath the axle, and so has the Krit and the Paige-Detroit and the McFarlan and the Hudson and a score or more of others; the tendency toward such construction is unusually pronounced.

Thinner Spring Leaves and More of Them.

The various types of spring suspensions that always have been a feature of American cars—the Lozier and the Peerless platform, the Jackson and the Franklin and the Paige-Detroit full-elliptic, the King cantilever, the semi-elliptics and the three-quarter elliptics that belong to no particular brand of car but to all—are much the same as they always have been and the improvements that have been made are rather deeper down than the eye can see.

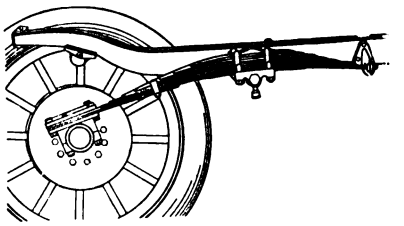
For instance, there is a tendency to use thinner leaves and a greater number of them, Peerless, as an example, having taken up construction of the kind. Also, there is a trend toward the adoption of methods that will permit positive lubrication between the leaves for long periods; the Marmon and several others have springs of this kind. And last but not least, the problem of spring shackle lubrication appears in a fair way to being solved.

Marion engineers have attacked this problem in a manner that has banished forever the grease cup that formerly perched at the ends of spring shackles, nearly always was forgotten until "canary birds" were hatched, and never was much of an ornament. Marion spring bolts are three-quarters of an inch in diameter and are hollow. Through the tube thus formed a wick carries the lubricant to the bolt bushing by means of a hole cut in the side of the bolt. And because of the capacity of the lubricant chamber, it is unnecessary to replenish the oil more than once a season. Incidentally, as the bolt has a large bearing surface, wear is minimized.



JEFFERY INTERNAL BRAKES

Up until the present time the King has remained practically the only exponent of the cantilever type of rear springs, though now the system has gained one more convert in the new National "six" which will be exhibited for the first time. Under the new National construction the rear springs are swivelled to the frame and are rigidly connected to the axle at the back; the front springs are of the conventional semi-elliptic type.



KING CANTILEVER SPRING

Although the Stevens-Duryea rear springs appear much like the ordinary three-quarter elliptic members to the average layman, that such is not the case is pointed out by those who are in the know. It is explained that in the designing, most careful plans were laid to cause the oscillations of one member practically to damp out the oscillations of the other, and that the result is a highly resilient suspension which gives readily to ordinary road obstructions but which is without the usual quick rebound and continued "bouncing" that make other springs objectionable and create a demand for shock absorbers. These latter devices, by the way, appear to have lost ground in popular estimation during the year, for the number of makers who now find it possible to get along without them appears to be increasing. Nevertheless, several makers have specified that for the coming year their products will carry Gabriel rebound snubbers for the first time.

Provision for Shorter Turning Radii.

What with the generally longer wheelbases that are coming to be the vogue, most makers have found it desirable to make provision for turning their cars on a somewhat shorter radius than has been possible in the past. The Marmon company probably was the pioneer in this respect, and for the coming season retains the somewhat unusual front wheel spindle that it uncovered at the last show. The spindle itself is so constructed that the steering center comes directly over the center of the tire, thus decreasing the amount of force required to turn the wheels. At the same time, the steering lock is such as to permit the car to be turned in an ordinary street without backing. The Chalmers company, too, has developed a new type of steering spindle which will be shown for the first time at the forthcoming shows.

The worm and full wheel steering gear still continues popular, and in the Great Western arrangement the designers have adopted a clever means of ensuring proper lubrication of the working parts. Instead of fitting the gearcase with a great grease cup, which is fairly common practice, they have substituted a fairly large receptacle

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which has a plain snap lid. Hence, to fill it, it is only necessary to open the lid, which is closed with a spring, and drop in the grease. The simplicity with which the whole operation can be completed acts to encourage proper care of the gear.

In the Keeton car, the makers have found it necessary, and no less expedient, to adopt construction that is out of the ordinary in the upbuilding of the steering column. Because the radiator is placed at the rear end of the engine it ordinarily would be necessary to remove it in order to disassemble the steering gear mechanism. To overcome the difficulty, the steering column has been made in two parts which are readily separable, though once they are put together they must "stay put."

Cut-outs rapidly are coming to be considered not only unnecessary but an actual nuisance, and as a consequence quite a few cars that have had them in the past will have them no more. As a rule, the natural demand for quiet operation has resulted in somewhat closer muffling of engines than has been the case in years gone by, and in this connection the muffler construction adopted by the Peerless company for its new cars is interesting. Instead of being virtually a one-piece affair with no take-apart to it, the device is so made that it is comparatively easy to extract the "insides" so that they may be cleaned; incidentally, the baffle plates are perforated.

Brakes have undergone a general enlargement during the year, and there is a marked tendency to employ construction which will render the develeopment of rattles less likely, the Franklin company, for an apt example, having adopted a new type of spring brake band retainers which effectually do away with the trouble. Twin internal expanding brakes appear to be on the increase, a number of makers, including Keeton, Allen, Jeffery and Cameron, all of them with new products, have adopted such construction in preference to internal and external members. The Marmon, of course, and the Great Western and a few others, always have had twin internal brakes. In the Pierce-Arrow arrangement—the brakes are internal and external, however—the designers have adopted a clever means to ensure stoppage of the car regardless of weather conditions and the wetness of the brakes. It is simply that in one set of brakes the materials are the same, while in the other set different materials are employed. Thus, if one set will not hold, the other is practically certain to stop the car.

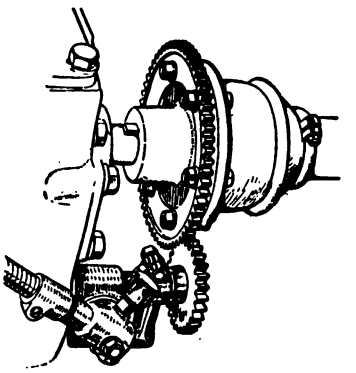
WIDENED SCOPE OF EQUIPMENT

The "one-man" top, which last year remained in the obscurity of the future, this year is one of the most conspicuous features of equipment in general—equipment which, by the way, now is even more complete than was the case a twelvemonth ago, when manufacturers first really saw the light and commenced listing their cars with the many things that once were listed as "extras" and charged for as such. In addition to tops and windshields and speedometers and electric lighting and engine starting systems, to say nothing of the usual complement of tools and spare parts and such things, not a few makers now are adding other devices that not even a stretch of the imagination would have placed on the cars of a year ago.

Carriers That Carry and Protect Tires.

Take the new Marion tire carrier, for instance. The holder is in the form of a wheel felloe, over which a tire, already mounted on a rim and inflated, is slipped. One lug, similar to those that fasten the rim to the vehicle wheel, holds the rim and tire securely in place. Straps and covers are done away with and there is no danger of the tire dropping off or being stolen, for its removal is impossible without the proper wrench. Incidentally, the bracket is held well away from the body so that the tire cannot chafe and ruin itself or the body, and the tire and rim are readily removable without the necessity for lifting the top when it is laid back. The Chalmers tire carrier is another that is somewhat similar in appearance and operation. In both of these designs and in many others, it is worthy of note that the weight of the equipment is supported not on the tire but on the rim itself.

With the introduction of electric lighting systems, manufacturers have found a ready means of increasing equipment by adding incandescent bulbs in places where heretofore there have been none. Dash lights are common, but in the Abbott-Detroit the idea has been carried a little further than is usual by providing a switch in the tonneau so that those who sit in the rear seats can "light up" in front at will. The lamp, needless to add, illuminates the speedometer as well as the other items on the cowlboard. Lights placed in the roofs of tops also are increasing, the Oakland car being so equipped. Neither raising nor lowering the top can affect the wiring or the lamp, both being fully protected. Another clever little "wrinkle" in the Oakland is the provision of a large tool case in the cowlboard and a glass robe rail for the tonneau.



COLE SPEEDOMETER DRIVE

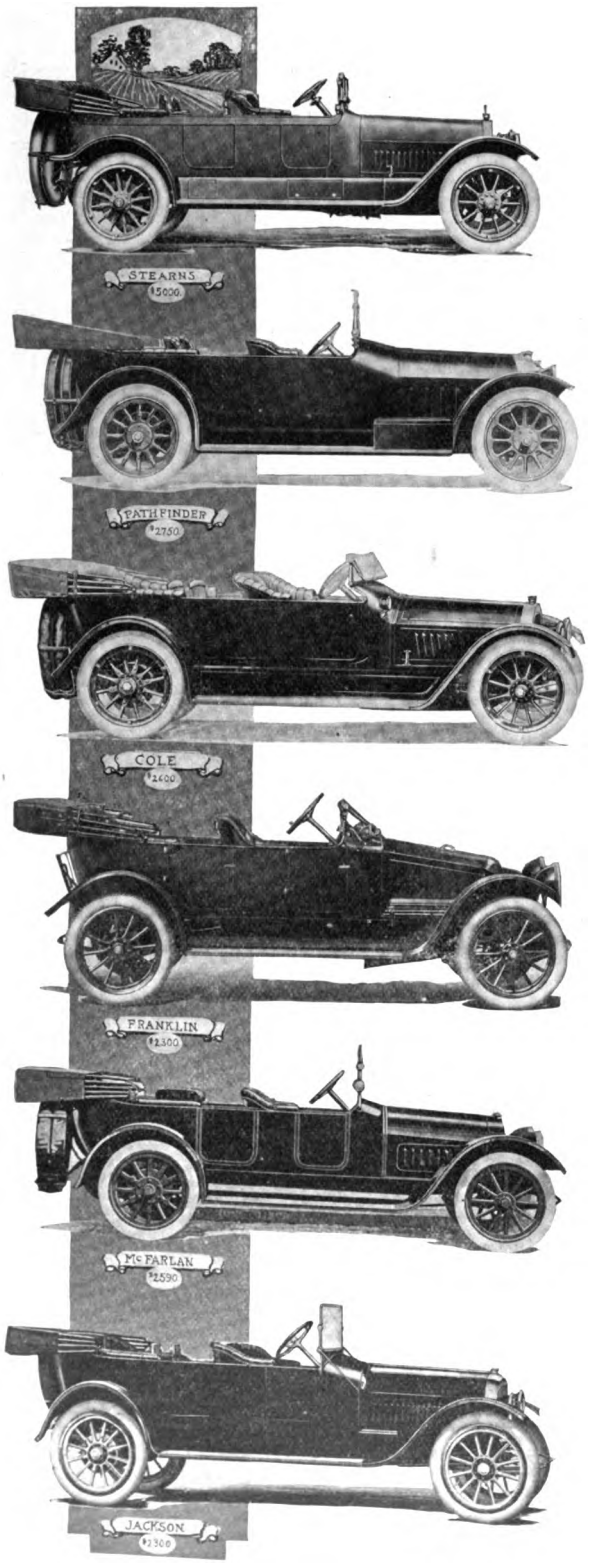
The Pierce-Arrow car probably always has been the best "locked" one there is, what with locks to the tool cases, the ignition, both sides of the engine hood and what not. And for the first time this year the makers of Speedwell and Chalmers cars both have added to their already long equipment lists, locks designed to prevent tampering with the gear shift lever in the absence of the person with the key.

Jiffy and Collins side curtains—figuratively speaking, miles ahead of the older style curtains which required much time and patience and no little expert knowledge to fit—this year are common, few cars leaving the factory without them. Packard curtains are a little different from any others, in that they are so arranged that they open with the doors, the door and the curtain, in fact, forming a large door.

Enclosing Speedometer Drive Mechanisms.

Speedometers now have come to be such a standard item of equipment that strange indeed is the car that is sent away from the factory without one. Latterly, there has become apparent a strong tendency toward the elimination of the usual, unprotected and more or less noisy front wheel drive. Several makers, among them the Cole, have dropped the front wheel drive entirely, and in its place have substituted drive from the propeller shaft or from the gearset, where the driving car can be either entirely enclosed or at least protected from dust and dirt and the effect of encounters with road obstructions. Others, like the Lozier, the Cadillac, the Hudson and the Chalmers, convinced of the advantages of a perfected front wheel drive, have adopted vastly improved drives in which the mechanism is fully enclosed within the hub of the wheel.

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SIX "SIXES" THAT COMPEL ATTENTION

Abbott-Detroit—Abbott Motor Co., Detroit, Mich.

Models—Three models on one six-cylinder chassis and three models on each of two four-cylinder chassis. All motors have L-head cylinders, the "six" measuring 3¾ x 5¼, the larger "four" 4½ x 5½ and the smaller "four" 4⅛ x 5¼. Transmission elements include dry disk clutches and three-speed gearsets in the "fours" and a four-speed gearset in the "six." Drive is by shaft to bevel gears in full-floating rear axles.

Prices—"Six": Roadster and touring, $2,190; limousine, $3,500. Larger "four": Roadster and touring, $1,985; limousine, $3,150. Smaller "four": Roadster and touring, $1,685; coupe, $2,250.

Changes from Previous Construction—The "six" is new throughout and is exhibited for the first time. In the "fours": Tires mounted at rear; headlamps provided with dimmer; new type cowl added; sloping hoods adopted.

Selling Features—Continental standard motors; electric Auto-Liter starter; dual ignition systems; Timken bearings; service; equipment; wide range of choice in body styles; luxurious upholstery; underslung springs; four-speed gearset in "six" with direct drive on third speed.

Equipment—Top with boot and Jiffy curtains; electric lighting; electric starter; electric horn; electric trouble lamp; windshield; number holders; Stewart-Warner speedometer with clock; demountable rims and double tire holder on rear.

Allen—Allen Motor Co., Fostoria, O.

Models—Two models on the same four-cylinder chassis with L-head cylinders measuring 4⅛ x 5 inches. Transmission elements include disk clutch, three-speed gearset, and bevel drive to full-floating rear axle. Wheelbase is 118 inches on 34 x 4 tires.

Prices—Roadster and five-passenger touring car, $1,395.

Changes from Previous Construction—Cylinder dimensions increased from 3¾ x 5 (in pairs) to 4⅛ x 5 (block); flywheel instead of chain starter attachment; generator direct connected instead of chain driven; full-floating instead of semi-floating axle; streamline body; wheelbase lengthened six inches to 118 inches; gasolene tank in skuttle instead of under seat.

Selling Features—Three-point motor suspension; unit power plant; block motor; disk clutch; gasolene tank in skuttle; deep, tilted cushions; convenient control arrangement; one-piece, built-in windshield; quickly adjusted curtains; heavy nickel trimmings; bullet side lamps; electric equipment.

Equipment—Auto-Lite electric lighting and starting system; speedometer; horn; windshield; top with boot and side curtains; Baker demountable rims; tools; jack; pump; tire repair kit; trouble lamp.

Apperson—Apperson Bros. Automobile Co., Kokomo, Ind.

Models—Eight models on one four- and one six-cylinder chassis, the "four" having cylinders measuring 4½ x 5 and the "six" having cylinders measuring 3¾ x 5½ inches. Transmission elements include compression band clutch, three-speed gearset and shaft drive to bevel gears in demountable floating type rear axles. Wheelbases are 116 and 120 inches for the "four" on 34 x 4 tires for light model and 36 x 4 for the standard type; 128 inches for the "six" on 36 x 4 tires.

Prices—"Light four": Touring and roadster, $1,600; coupe, $2,350. Larger "four": Five-passenger touring, $1,785; Sedan-limousine, $2,500. "Six": Roadster and five-passenger touring, $2,200.

Changes from Previous Construction.—Gasolene capacity increased; doors widened 2 inches; steering wheel corrugated; upholstery made thicker; cowl board added; Bijur electric lighting and engine starting system added; Mea high-tension magneto added; double tire irons instead of single; new type compression grease cups adopted; five- instead of four-bow top; wheelbases lengthened.

Selling Features—Block T-head six-cylinder motor; demountable floating rear axles; large motor valves; contracting hand clutch; sliding vane water pump; silent transmission; Apperson springing system; left steer with center control; electric lighting and engine starting system; high-tension Mea magneto.

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Equipment—Top with dust cover; Collins quick adjustable curtains; ventilating rain-vision windshield; full cowl board equipment; speedometer; clock; demountable rims with one extra rim attached with double tire irons in rear; robe rail; foot rail; license holder; electric starter, generator; electric horn; tools; jack; tire pump; repair kit. On the Light "Four forty-five" the equipment is the same excepting that Collins curtains, rain vision windshield, cowl board, double tire irons and license holder not furnished on this model. Removable side curtains, clear vision windshield, dash equipment and single tire irons are furnished instead on the Light "Four forty-five."

Austin—Austin Automobile Co., Grand Rapids, Mich.

Models—Three models on three six-cylinder chassis, the motors measuring 4½ x 7 inches, 4½ x 6 inches and 4 x 5½ inches, respectively. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in full-floating rear axles, including the Austin two-speed gear. The wheelbase of the standard chassis is 141 inches and the tires measure 37 x 5 inches.

Prices—Smallest chassis with touring model, $4,000; next larger, $5,000; largest chassis, $6,000.

Changes from Previous Construction—The motor in the smallest chassis is new throughout and replaces one with cylinders measuring 4 x 5 inches. Electric lighting and engine starting equipment added; two-speed rear axle made standard equipment on all. Other chassis remain practically unchanged.

Selling Features—Austin two-speed rear axle; hydraulic spring controllers; extreme flexibility; only car featuring two-speed axle and six-cylinder motor.

Equipment—Top with boot and curtains; windshield; electric lighting and engine starting system; speedometer; tools; pump; jack; tire repair kit.

Auburn—Auburn Automobile Co., Auburn, Ind.

Models—Two models on one four- and one six-cylinder chassis, the "four" having cylinders measuring 4½ x 5 inches and the "six" 3¾ x 5¼ inches. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 120 inches on 36 x 4-inch tires for the "four"; and 130 inches on 37 x 4½-inch tires for the "six."

Prices—"Four": Roadster, $1,490; touring, $1,590. "Six": Roadster, $2,000; touring, $2,100.

Changes from Previous Construction—The "six" is new throughout and is exhibited for the first time. Few changes in the "four."

Selling Features—Low price; small bore, high-speed motors; economy of operation; standardization of parts.

Equipment—Top, top hood; electric lighting and starting; electric horn; windshield; speedometer; demountable rims; foot rail; tire irons and extra demountable rim.

Buick—Buick Motor Co., Flint, Mich.

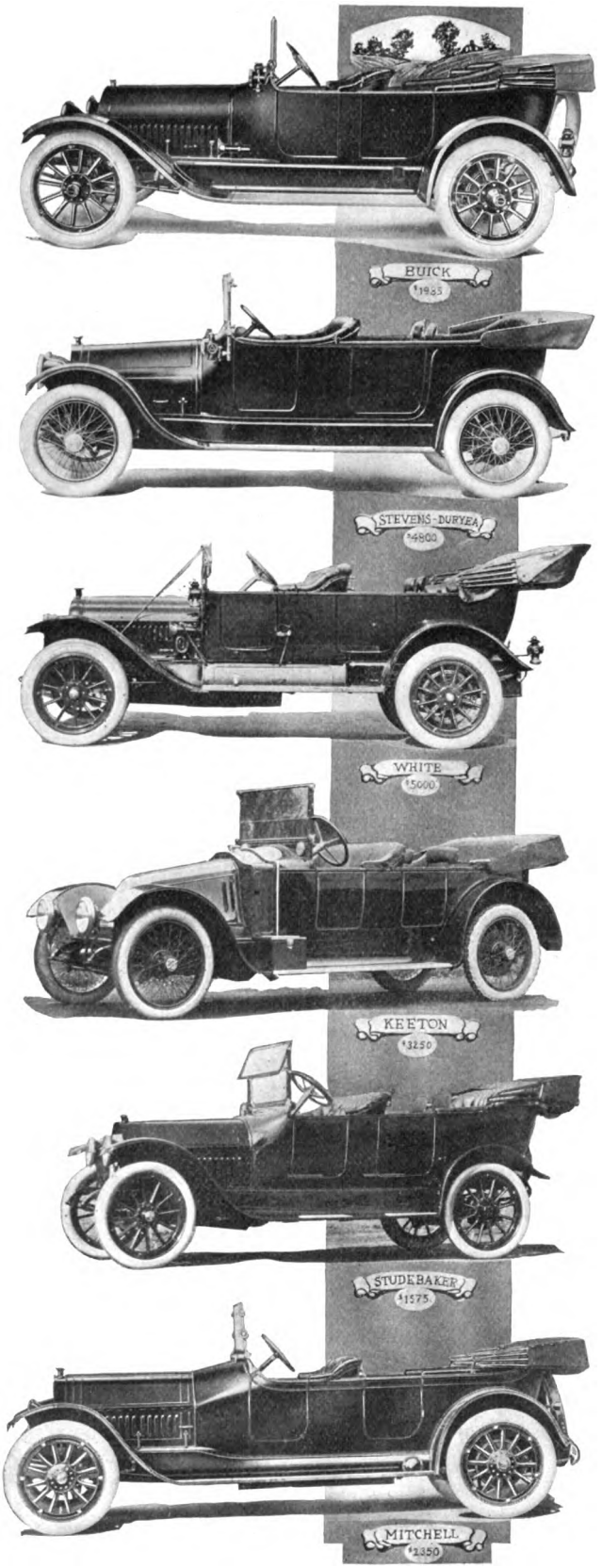
Models—Six models on three chassis, two "fours" and a "six," all having overhead valve motors. Cylinders measure 3¾ x 3¾ for the smaller "four" and 3¾ x 5 for both the larger "four" and the "six." Transmission elements include cone clutches and three-speed gearsets, bevel drive and three-quarter floating axles in the "fours" and full-floating in the "six." Wheelbases are 105, 112 and 130 inches, and tires measure 32 x 3½, 34 x 4 and 36 x 4½ inches.

Prices—Smaller "four" roadster, $950; five-passenger touring, $1,050. Larger "four" roadster, $1,235; five-passenger touring $1,335; coupe, $1,800. "Six" five-passenger touring, $1,985.

Changes from Previous Construction—New style ball and socket rocker arms on motor, lined with felt; center control with left drive; Delco electric lighting and engine starting added; new six-cylinder model added to line.

Selling Features—Overhead valve motor; Delco electrical equipment; variety of body styles; large tires; long wheelbase; liberal bearing surfaces; left side steering with center control; extra large brakes.

Equipment—Combination oil and electric lamps; Delco electric



MORE "SIXES" OF THE APPEALING SORT

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lighting and engine starting system; electric horn; top; windshield; speedometer; top boot and curtains; demountable rims; foot and robe rails; tools; jack; tire repair kit; pump.

Cadillac—Cadillac Motor Car Co., Detroit, Mich.

Models—Seven models on one four-cylinder chassis with L-head cylinders measuring 4½ x 5¾. Transmission elements include cone clutch, three-speed gearset with double bevel drive to electrically controlled two-speed rear axle. Wheelbase measures 120 inches with 36 x 4½ tires.

Prices—Roadster, four- and five-passenger touring car, $1,975; seven-passenger touring car, $2,075; coupe-landaulet, $2,500; inside drive limousine, $2,800; seven-passenger limousine, $3,250.

Changes from Previous Construction—Improved Delco lighting, starting and ignition system with automatic spark control; switch lock added; cranking speed increased; swinging type air valve substituted for poppet type valve in carburetter; auxiliary air inlet eliminated; electric intake air heating device adopted; Cadillac electrically controlled two-speed rear axle adopted; rear side springs lengthened six inches; gasolene tank located at rear and fuel fed by pressure; tilting steering wheel adopted; speedometer drive placed in hub of wheel; equipment added.

Selling Features—Copper jacketed engine cylinders; extreme accuracy in fitting parts; "silent" chain camshaft drive; five-bearing crankshaft; automatic spark control; carburetter air heater; cone clutch with spring ring; two-speed rear axle; worm gear sector steering gear; right hand control; tilting steering wheel; tilting front seat cushion; three-quarter platform rear suspension; pressure gasolene feed; hand-buffed leather upholstery; linoleum-covered running boards, metal bound; clean lines.

Equipment—Top with boot and side curtains; windshield; full lamp equipment; Delco electric lighting, engine starting and ignition system; gasolene gauge; electric horn; power tire pump; foot and robe rails; Warner speedometer; tire irons; tools and tire repair kit.

Case—J. I. Case T. M. Co., Racine, Wis.

Models—Three models on three four-cylinder chassis having cylinders measuring 3¾ x 4¾, 4¼ x 5½ and 4½ x 5¼ inches, respectively. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 110 inches on 32 x 4-inch tires for the smallest chassis; 120 inches on 35 x 4½-inch tires for the next larger chassis, and 124 inches on 37 x 4½-inch tires for the largest chassis.

Prices—Touring models, $1,250, $1,850 and $2,300, respectively.

Changes from Previous Construction—The two smaller models are new throughout and are exhibited for the first time. In the largest model, dual instead of single Bosch ignition; Pantasote instead of mohair top; fenders pressed steel instead of built up type.

Selling Features—Unusually complete equipment; T-head motors; disk clutches, selective gearsets; left drive with center control; Westinghouse electric lighting and engine starting system.

Equipment—Westinghouse electric starter and lighting equipment; Warner speedometer; eight-day clock; two-tone electric vibrator horn; extra tire on rim, with tire cover, carried on side; two extra inner tubes; Weed tire chains; all lamps electric; Pantasote top; combination oil and electric dash and tail lamps; automatic impulse tire pump; work light; rain vision ventilating windshield.

Chandler—Chandler Motor Car Co., Cleveland, O.

Models—Five models on one six-cylinder chassis with L-head cylinders measuring 3⅛ x 5 inches. Transmission elements include multiple disk clutch, three-speed gearset and bevel drive to floating rear axle. Wheelbase is 120 inches on 34 x 4 tires.

Price—Touring model, $1,785.

Changes from Previous Construction—Coventry "silent" chain drive to camshaft.

Selling Features—Light weight, weighing less than 3,000 pounds fully equipped; low gasolene consumption, 16 miles to the gallon; unit power plant; mud-proof motor; left side drive and center control; Westinghouse electric system; Mayo, Mercedes-type honeycomb radiator; complete equipment; long stroke, accessible motor; roomy bodies.

Equipment—Top with boot and curtains; windshield; speedometer; clock; Sparton electric horn; nickeled trimmings; pump; demountable rims; tire repair kit; jack.

Chalmers—Chalmers Motor Co., Detroit, Mich.

Models—Eight models on two chassis, one four-cylinder and one six-cylinder. "Six" cylinders measure 4 x 5½; "four" cylinders measure 4¼ x 5¼. Transmission elements include disk clutch and four-speed gearset in both, with bevel drive and full-floating rear axles. Wheelbases measure 132 inches in the "six," with 36 x 4½ tires, and 118 inches in the "four," with 36 x 4 tires.

Prices—"Six": Roadster, four- and five-passenger touring car, $2,175; six-passenger touring car, $2,275; coupe, $2,850; limousine, $3,600. "Four": Four- or five-passenger touring car, $1,775.

Changes from Previous Construction—Motor of T-head type with enclosed valves; cylinder dimensions altered from 4¼ x 5¼ to 4 x 5½; water-jacketed manifold adopted; pneumatic starter replaced by Entz electric system; cork inserts provided in clutch; new torque rod hanger adopted; steering gear shifted to left side with control in the center; more leaves added in springs; wheelbase lengthened two inches to 132 inches; fenders domed; running boards cleaned of equipment; gasolene tank shifted to rear. "Light six" added to line.

Selling Features—Non-stallable, long-stroke motor; unit power plant; quietness; flexibility; rear gasolene tank; fuel economy; molded fenders; four forward speed gearset; combination force feed and splash oiling system; cork insert clutch; electric equipment; tires carried at rear in new carrier; balance; long wheelbase; wide doors; invisible speedometer drive; quick-acting top; interchangeable bodies; underslung rear springs.

Equipment—Silk mohair top with boot and side curtains; Entz electric lighting and engine starting system; Warner speedometer; windshield; demountable rims with one extra; special tire carrier; electric horn; license brackets; inspection lamp; Corbin gear lock; robe and foot rails; tire repair kit; tools; pump; jack.

Cole—Cole Motor Car Co., Indianapolis, Ind.

Models—Three models on both four and six-cylinder chassis, both motors having L-head cylinders measuring 4¼ x 5¼. Transmission elements include cone clutches, three-speed selective gearsets and shaft drive to bevel gears in full-floating rear axles. Wheelbases are 120 inches with 34 x 4½-inch tires on the "four" and 136 inches with 36 x 4½-inch tires on the "six."

Prices—"Four": Roadster, four- and five-passenger touring car, $1,925; coupe, $2,350. "Six": Six- and seven-passenger touring, $2,600; coupe, $3,000; limousine, $4,000.

Changes from Previous Construction—Bodies enlarged; motors and tires enlarged; wheelbase lengthened; long-grain hand-buffed leather upholstery adopted; Pantasote adopted for top material; electric lighting and engine starting system added.

Selling Features—Standardization of parts; Timken axles; tungsten steel valves; Timken bearings throughout; three-point suspension of unit power plant; Delco electric lighting and engine starting system; Mayo radiator; Gemmer steering gear; Detroit Steel Products springs; Spicer universal joints; Hydraulic pressed steel frames; Stromberg carburetter; Firestone tires and demountable rims; Warner speedometer and clock; Janney-Steinmetz seamless tank; Collins curtains; Taylor motor-driven pump.

Equipment—Top with boot and Collins curtains; windshield; Warner speedometer and clock; Delco combined electric lighting engine starting and ignition system; Taylor power tire pump; tools; tire repair kit; demountable rims; horn; jack.

Colby—Colby Motor Co., Mason City, Ia.

Models—Touring and roadster models on four- and six-cylinder chassis.

Price—Highest price, $2,750.

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Changes from Previous Construction—New type starter; new style hood; streamline bodies.

Selling Features—Continental long-stroke motors; Timken axles; Brown-Lipe transmissions; Rayfield carburetter; Eisemann magneto; Gray & Davis electric lighting systems.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting system; tools; tire repair kit; pump; jack.

Crow—Crow Motor Car Co., Elkhart, Ind.

Models—Ten models on two four- and one six-cylinder chassis. "Four" cylinders measure 4 x 5 inches and 4¼ x 5½ inches, respectively. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in semi-, three-quarter and full-floating rear axles in the three models, respectively. Wheelbases are 114 inches on 33 x 4-inch tires for the smaller "four," 120 inches on 34 x 4-inch tires for the larger "four" and 130 inches on 36 x 4-inch tires for the "six."

Prices—Not quoted.

Changes from Previous Construction—Mechanical alterations consist essentially of detail refinements.

Selling Features—Power; flexibility; choice of four- and six-cylinder models; large brakes; easy riding qualities; extra heavy wheels; electric lighting and engine starting system; drive shaft completely enclosed; reinforced radiator supported on trunnions; worm and nut type steering gear; three-quarter elliptic rear springs.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting system; Stewart speedometer; tire carrier; tools; tire repair kit; pump; jack. "Six" has in addition electric engine starter.

Cameron—Cameron Mfg. Co., New Haven, Conn.

Models—Five models on one four-cylinder chassis, with cylinders measuring 3⅝ x 5. Transmission elements include inverted cone clutch and Cameron direct drive four-speed gearset on rear axle. Wheelbase is 115 inches and tires measure 32 x 3½.

Price—$1,200.

Changes from Previous Construction—Water cooling substituted for air cooling; special design pointed radiator adopted; brake equalizers hung to driving shaft tube; electric lighting and starting adopted; left drive with center control.

Selling Features—Four-speed direct drive transmission system in rear axle; full-floating rear axles; long-stroke block motor; full elliptic rear springs; clean cut motor design; magneto driven from transverse shaft; all parts of motor accessible by lifting only one side of hood; light weight.

Equipment—Mohair top with boot and side curtains; windshield; speedometer; tools; tire repair kit; pump; electric lighting and engine starting system; jack; pump.

Cartercar—Cartercar Co., Pontiac, Mich.

Models—Six models on two four-cylinder chassis, the smaller of which is new throughout and has a 3½ x 5-inch motor. Transmission elements include the Cartercar friction system with "silent" chain drive to rear axle. Wheelbases are 106 inches on 32 x 3½-inch tires for the smaller chassis and 116 inches on 36 x 4-inch tires for the larger.

Prices—Smaller chassis: Roadster and touring, $1,250: Larger chassis: Roadster, $1,600; touring, $1,700; coupe, $1,900; Sedan, $2,000.

Changes from Previous Construction—The smaller chassis is new throughout and is exhibited for the first time.

Selling Features—Carter friction transmission system; deep upholstery; roomy bodies; complete equipment.

Equipment—Top with boot and curtains; windshield; electric lighting and engine starting system; tools; tire repair kit; pump; jack, and horn.

Cornelian—Blood Bros., Kalamazoo, Mich.

Models—One model on one four-cylinder chassis. Transmission elements include disk clutch and two-speed gearset with drive through four special leather joints.

Price—Roadster, $425.

Changes from Previous Construction—Cyclecar which is new throughout and is exhibited for the first time.

Selling Features—Light weight; standard tread; sliding gears; disk clutch; wire wheels.

Equipment—Complete.

Empire—Empire Automobile Co., Indianapolis, Ind.

Models—One model on one four-cylinder chassis having L-head cylinders measuring 3¾ x 4½ inches. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in semi-floating rear axle. The wheelbase is 110 inches on 32 x 3½-inch tires.

Price—Touring model, $900.

Changes from Previous Construction—Except for an increase in the wheelbase length, the car remains substantially the same.

Selling Features—Low price; unit power plant; disk clutch; three-speed selective gearset; complete equipment; long springs; three-point motor suspension; three-quarter scroll elliptic rear springs.

Equipment—Top with boot and curtains; windshield; speedometer; gas head lamps; horn; pump; jack; tools; tire repair kit.

Fiat—F. I. A.T., Poughkeepsie, N. Y.

Models—Eight models on two four- and one six-cylinder chassis. The smaller "four" and the "six" measure 4½ x 6 inches, the larger "four" measuring 5⅛ x 6⅞ inches. Transmission elements include disk clutches, four-speed gearsets and shaft drive to semi-floating rear axles. Wheelbases are 123 inches on 36 x 4½ and for the smaller "four"; 128 inches on 36 x 4½ and 37 x 5-inch tires for the larger "four"; and 135 inches on same size tires for the "six."

Prices—Smaller "four": Roadster and phaeton, $4,000; limousine, $5,000; landaulet, $5,100; Berline, $5,300. Larger "four": Roadster, touring and phaeton, $4,500; limousine, $5,500; landaulet, $5,600; Berline, $5,800. "Six": Touring and phaeton, $5,000; limousine, $6,000; landaulet, $6,100; Berline, $6,300.

Changes from Previous Construction—No alterations except for addition of engine starting system where specified.

Selling Features—Long-stroke, block-cast motors; simplicity; accessibility; beautiful coach work; both four- and six-cylinder motors.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting system; clock; Klaxon and bulb horns; demountable rims with extra and tire carriers; trunk rack; robe and foot rails; tools; tire repair kit; pump; jack.

Franklin—Franklin Automobile Co., Syracuse, N. Y.

Models—Six models on one six-cylinder chassis with overhead valve cylinders measuring 3⅝ x 4 inches. Transmission elements include multiple disk clutch, three-speed gearset and bevel drive to semi-floating rear axle. Wheelbase is 120 inches and tires measure 34 x 4½.

Prices—Touring and roadster, $2,300; coupe, $2,950; sedan, $3,200; limousine, $3,300; Berline, $3,400.

Changes from Previous Construction—Concentration on one model, the "Six-Thirty"; new rear axle; motor more accessible; all units independent of each other and readily accessible; left drive with center control; 200 pounds reduction in weight; spiral timing gears; Eisemann magneto; wheelbase lengthened to 120 inches; engine nickel-plated and black enamel; long walking beam support eliminated; packing removed from engine and placed on wings of engine hood, promoting accessibility; oil tank gauge and filler combined; spring brake band supports adopted; starting switch smaller and operates horizontally; new hood hinges; front mudguards extended; new top irons which hold each bow separately; steering column black enamel instead of nickel; new design luggage carrier.

Selling Features—Direct air cooling; light weight; fuel econ-

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omy; easy riding qualities; full-elliptic springs; laminated wood frame; Entz electric system; silence and flexibility; recirculating oiling system with sight feeds on dash; dash control of gasoline and air supply; automatic spark control; large tires; accessibility of motor; one chassis with six different interchangeable bodies; left drive with center control; drive through springs without strut rods; tubular axles.

Equipment—Top with boot and side curtains; windshield; Corbin-Brown speedometer; Entz electric lighting and engine starting system; Newtone electric horn; full tool equipment including jack, pump and tire repair kit.

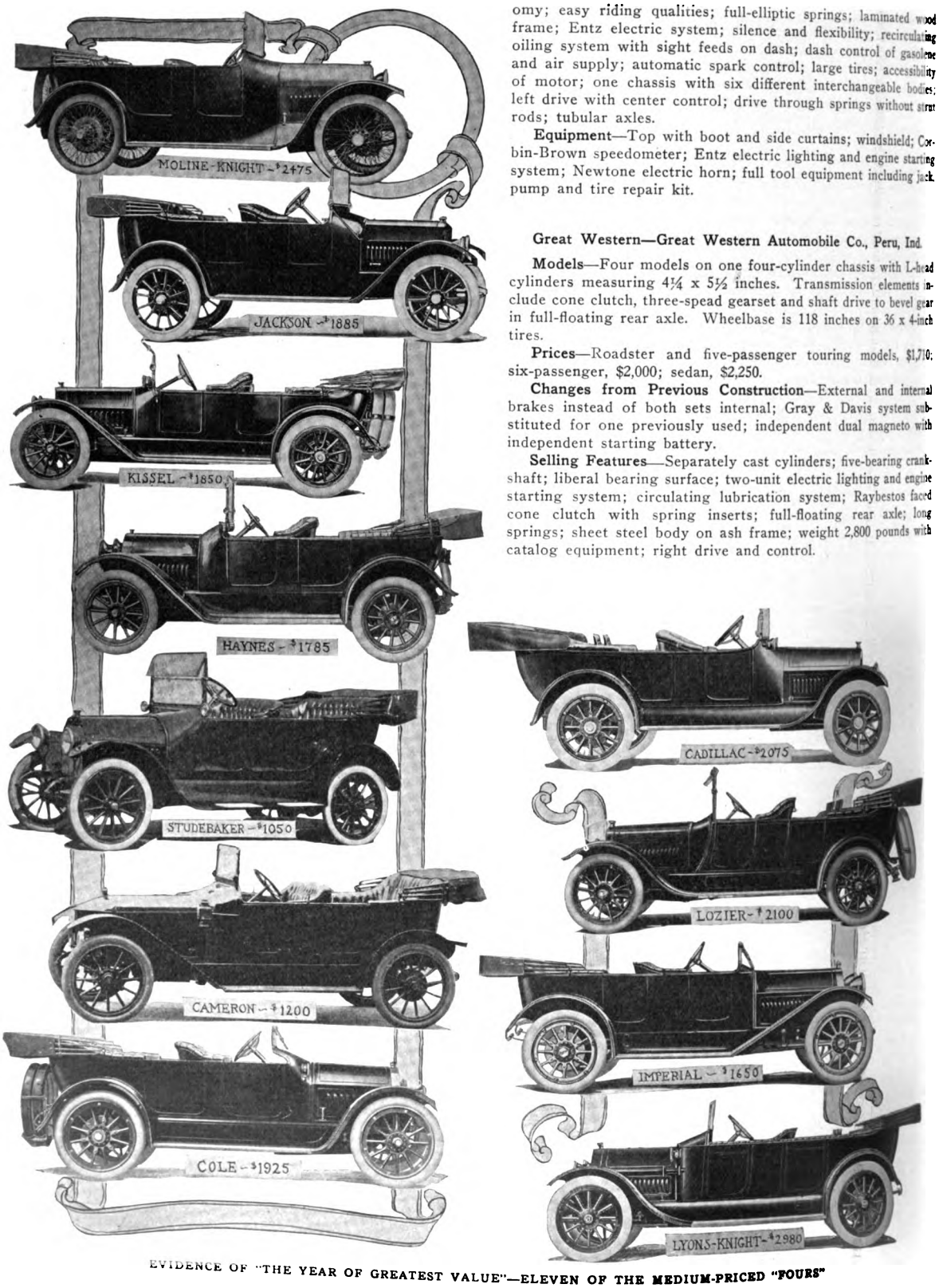
Great Western—Great Western Automobile Co., Peru, Ind.

Models—Four models on one four-cylinder chassis with L-head cylinders measuring 4¼ x 5½ inches. Transmission elements include cone clutch, three-spead gearset and shaft drive to bevel gear in full-floating rear axle. Wheelbase is 118 inches on 36 x 4-inch tires.

Prices—Roadster and five-passenger touring models, $1,710; six-passenger, $2,000; sedan, $2,250.

Changes from Previous Construction—External and internal brakes instead of both sets internal; Gray & Davis system substituted for one previously used; independent dual magneto with independent starting battery.

Selling Features—Separately cast cylinders; five-bearing crankshaft; liberal bearing surface; two-unit electric lighting and engine starting system; circulating lubrication system; Raybestos faced cone clutch with spring inserts; full-floating rear axle; long springs; sheet steel body on ash frame; weight 2,800 pounds with catalog equipment; right drive and control.



EVIDENCE OF "THE YEAR OF GREATEST VALUE"—ELEVEN OF THE MEDIUM-PRICED "FOURS"

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Equipment—Silk mohair top with boot and curtains; windshield; Stewart Speedometer; Gray & Davis electric lighting and engine starting system; foot and robe rails; electric horn; demountable rims; tank gauge; tire carriers; tools; jack, pump; tire repair kit.

Havers—Havers Motor Car Co., Port Huron, Mich.

Models—Two models on two six-cylinder chassis, the smaller having cylinders measuring 3¾ x 5 inches and the larger 4⅛ x 5¼ inches. Transmission elements include disk clutches and three-speed gearsets with shaft drive to bevel gears in floating rear axles. Wheelbases are 122 inches on 36 x 4-inch tires for the smaller and 128 inches on 36 x 4½-inch tires for the larger.

Prices—Smaller chassis with touring body, $1,985; larger chassis with touring body, $2,485.

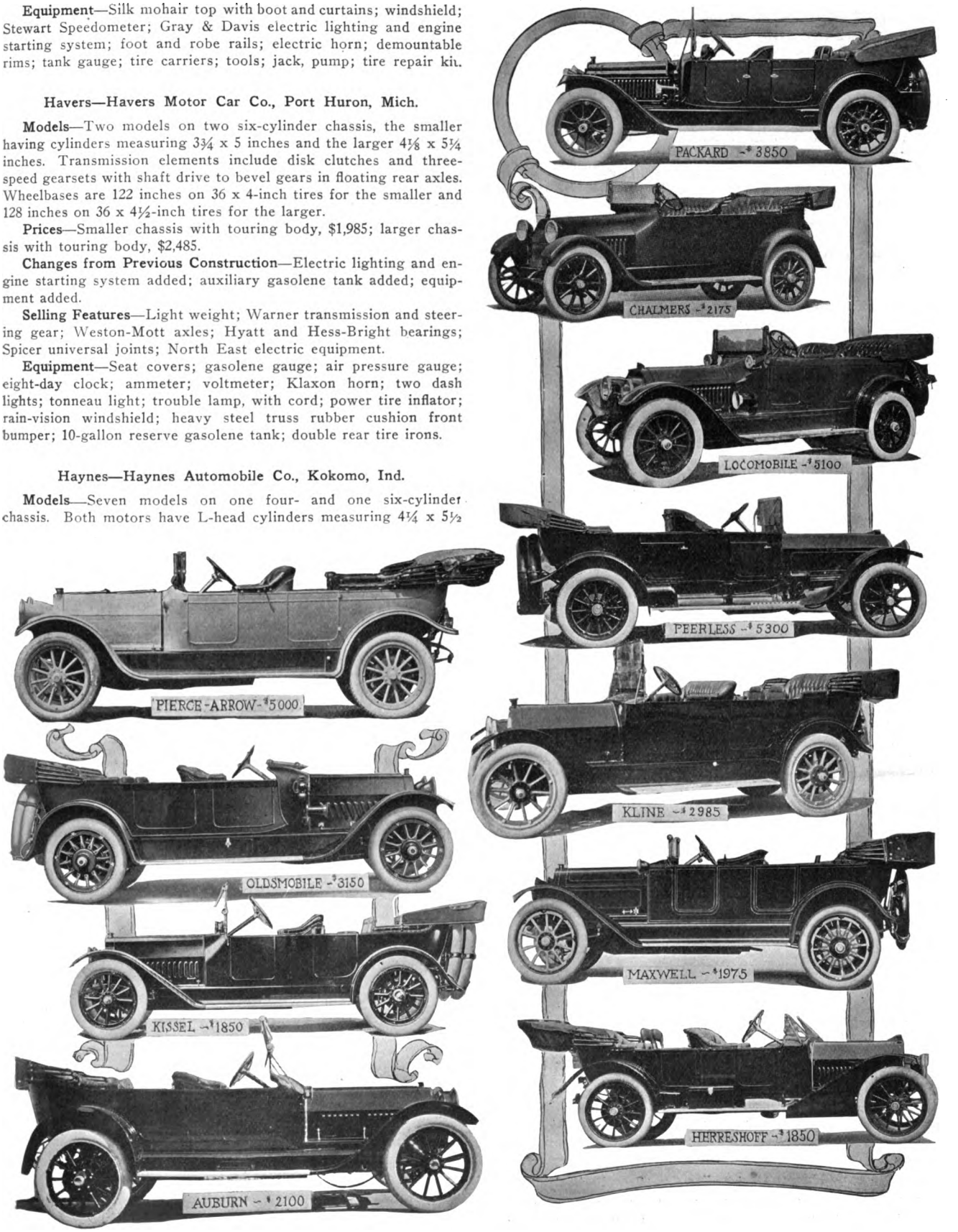
Changes from Previous Construction—Electric lighting and engine starting system added; auxiliary gasolene tank added; equipment added.

Selling Features—Light weight; Warner transmission and steering gear; Weston-Mott axles; Hyatt and Hess-Bright bearings; Spicer universal joints; North East electric equipment.

Equipment—Seat covers; gasolene gauge; air pressure gauge; eight-day clock; ammeter; voltmeter; Klaxon horn; two dash lights; tonneau light; trouble lamp, with cord; power tire inflator; rain-vision windshield; heavy steel truss rubber cushion front bumper; 10-gallon reserve gasolene tank; double rear tire irons.

Haynes—Haynes Automobile Co., Kokomo, Ind.

Models—Seven models on one four- and one six-cylinder chassis. Both motors have L-head cylinders measuring 4¼ x 5½



STREAMLINE "SIXES" THAT APPEAL TO DIFFERENT-SIZED POCKETBOOKS

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inches. Transmission elements include contracting band clutches and three-speed electrically operated gearsets, drive through shaft to bevel gears in full-floating rear axles. Wheelbases are 118 on 34 x 4-inch tires for the "four" and 130 on 36 x 4½-inch tires for the "six."

Prices—"Four": Roadster, four- and five-passenger touring, $1,985; coupe, $2,800. "Six": Six- and seven-passenger touring, $2,785. "Six" with 130-inch wheelbase and either roadster, four- or five-passenger touring body, $2,700.

Changes from Previous Construction—In the "six": Gasolene tank shifted to rear; kick pads added to back of front seats; "four" practically unaltered.

Selling Features—Vulcan electric gear shift; electric lighting and engine starting system; flexible four-point motor suspension; contracting band clutch; full-floating axles; twelve-spoked wheels; long springs.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting system; horn; robe and foot rails; demountable rims; tire carriers; tools; tire repair kit; pump; jack.

Henderson—Henderson Motor Car Co., Indianapolis, Ind.

Models—Two models on two four-cylinder chassis, one model on one six-cylinder chassis. "Fours" measure 4⅛ x 5½ inches and 4⅛ x 5¼ inches, respectively, the "six" measuring 3¾ x 5½ inches. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 116 inches in both "fours" on 34 x 4-inch tires, and 126 inches on 35 x 4½-inch tires in the "six."

Prices—Smaller "four," touring model, $1,585; larger "four," roadster and touring, $1,785; coupe, $2,285; "six": Roadster and touring, $2,285; coupe, $2,785.

Changes from Previous Construction—Smaller "four" is new throughout and is exhibited for the first time. In other models controls have been placed on dash and bodies enlarged.

Selling Features—Kerosene carburetter; center control lever; dash gasolene tank; dash arrangement of controls; long-stroke motors; ebony finish woodwork; clear running boards; electric lighting and starting.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting equipment; electric horn; clock; wire wheels; pump; jack; tools; tire repair kit; robe and foot rails.

Herreshoff—Herreshoff Motor Co., Detroit, Mich.

Models—Four models on one each four- and six-cylinder chassis. Both motors measure 3⅜ x 4½ inches. Transmission elements include disk clutches, four-speed gearsets and shaft drive to bevel gears in semi-floating rear axles. Wheelbases are 100 and 110 on 32 x 3½-inch tires for the "four" and 124 inches on 34 x 4-inch tires for the "six."

Prices—"Six": Roadster, five- and six-passenger touring, $1,850; seven-passenger touring, $1,900. "Four": Roadster, $1,250; touring models, $1,350; coupe, $1,650.

Changes from Previous Construction—Alterations concern bodies, which are wider and have deeper upholstery. Mechanical alterations are few.

Selling Features—Light weight (under 2,800 pounds for the "six"); four forward speed gearset with direct on fourth; small bore; long stroke; high speed motor; fuel economy; electric horn button in center of steering wheel; high-speed electric starter of light weight; enclosed mechanism; simplicity and accessibility.

Equipment—Top with boot and curtains; speedometer; windshield; Westinghouse electric lighting and engine starting system; electric horn; demountable rims; tire carriers; extra demountable rim; tools; tire repair kit; pump; jack; foot and robe rails.

Hudson—Hudson Motor Car Co., Detroit, Mich.

Models—Two models on "big six" chassis; three models on "little six" chassis. Both motors have L-head cylinders, the smaller measuring 3½ x 5 inches and the larger 4⅛ x 5¼ inches. Transmission elements include disk clutches, three-speed gearset in the smaller model and four-speed with direct drive on third speed in larger, shaft drive to bevel gears in full-floating rear axles. Wheelbases are 123 inches in the smaller model on 34 x 4-inch tires, 135 inches in the larger model on 36 x 4½-inch tires.

Prices—Smaller chassis: Roadster and six-passenger phaeton, $1,750; cabriolet, $1,950. Larger chassis: Seven-passenger touring, $2,250; Sedan, $3,100.

Changes from Previous Construction—Smaller chassis is new throughout and is exhibited for the first time. In larger chassis: Seven-passenger body; wheelbase lenghtened; left drive and center control; larger tires; extra tires carried in front of forward door; four forward speeds with direct drive on third; streamline body; side lamps eliminated; Delco electric lighting and engine starting system; gasolene tank in cowl; wider doors; extra seats fold out of sight; equipment added.

Selling Features—Six-cylinder engines; streamline bodies; side lamps eliminated; four-speed gearset in larger model with direct drive on third; medium prices; light weight; easy riding qualities; fuel economy; left drive with center control; Delco electric lighting, ignition and starting combined; new speedometer drive; cabriolet body; complete equipment.

Equipment—"One-man" top with boot and quick adjustable side curtains; built-in windshield; speedometer; gasolene gauge; electric horn; demountable rims with extra and tire carriers; trunk rack; tools; tire repair kit; pump; jack; Delco electric lighting and engine starting system.

Hupmobile—Hupp Motor Car Co., Detroit, Mich.

Models—Four models on one four-cylinder chassis having L-head cylinders measuring 3¼ x 5½. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in full-floating rear axle. Wheelbases are 106 and 126 inches and tires measure 32 x 3½ on roadsters and 33 x 4 on larger models

Prices—Roadster and four-passenger touring with electric starter, $1,200; without starter, $1,050; six-passenger with starter, $1,300; coupe with starter, $1,350.

Changes from Previous Construction—Minor motor changes to accommodate starter; stiffening ribs in motor pan; Westinghouse electric lighting and engine starting system; control hood enlarged; top about two inches higher; rain-vision windshield; gasolene capacity increased three gallons; Kelsey split demountable rims; equipment added.

Selling Features—Long-stroke, small-bore motor; three-bearing crankshaft and block-cast cylinders; hollowed crankshaft; gear and crankcase in single casting; one universal joint; full-floating rear axle; cowl gasolene tank; rain shield on magneto; special tire carriers; over-size tires.

Equipment—Top with boot and Jiffy curtains; windshield; demountable rims; tire carriers; Max-eff electric horn; speedometer; tools; tire repair kit; jack; pump; electric lighting and engine starting system when specified.

Imperial—Imperial Automobile Co., Jackson, Mich.

Models—Five models on two four- and two six-cylinder chassis; smaller "four" measures 4½ x 5; larger "four," 4¼ x 5½; smaller "six," 3¾ x 5½; larger "six," 4⅛ x 5¼. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 114 on 33 x 4-inch tires for the smaller "four"; 118 inches on 34 x 4-inch tires for the larger "four"; 126 inches on 36 x 4½-inch tires for the smaller "six"; 137 inches on 36 x 4½-inch tires for the larger "six."

Prices—Smaller "four" roadster and touring, $1,500; larger "four" touring, $1,650; smaller "six" touring, $2,000; larger "six" touring, $2,500.

Changes from Previous Construction—Few alterations except for addition of electric lighting and engine starting systems.

Selling Features—Easy riding springs; Continental six-cylinder motors; silent and efficient electric starter; luxurious upholstery; beautiful body lines; left drive with center control; large brakes

Equipment—Top with curtains and dust cover; windshield; speedometer; combined single and double tire holders; electric

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horn; robe rail; foot rail; tire repair outfit; demountable rims, with extra rim; tool outfit; jack; pump; speedometer light; lock switch; kick pads.

Jackson—Jackson Automobile Co., Jackson, Mich.

Models—Four models on three chassis, two of which are "fours" and one is a "six." The "fours" have cylinders measuring 4½ x 5¼ inches and 4⅛ x 4¾, respectively; the "six" measures 4¼ x 5¼. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in full-floating rear axles. Wheelbases are 115 inches on 34 x 4-inch tires for the smaller "four," 124 inches on 36 x 4 tires for the larger "four," and 132 or 138 inches on 36 x 4½ tires for the "six."

Prices — Smaller "four": Touring, $1,385; roadster, $1,525; larger "four": touring, $1,885. "Six": seven-passenger touring, $2,300; five-passenger, $2,150.

Changes from Previous Construction—Fenders moulded; tool boxes removed from running boards; smaller "four" regularly equipped with electric lighting and engine starting system; side lamps eliminated.

Selling Features—Full elliptic springs front and rear; exceptionally easy riding; moderate price; full-floating rear axles; electric lighting and starting.

Equipment—Mohair top, with boot and curtain; ventilating windshield; speedometer; oil gauge and gasolene gauge on dash; speedometer light; Firestone universal quick detachable demountable rims; extra rim with carrier at rear; foot rail; coat rail; pump; tools and jack; electric cranking, electric lights and electric horn.

Jeffery—Thos. B. Jeffery Co., Kenosha, Wis.

Models—Five models on one each four- and six-cylinder chassis. Both motors have L-head cylinders measuring 3¾ x 5¼. Transmission elements include cone clutches, four-speed gearsets and shaft drive to bevel gears in full-floating axles. Wheelbases are 116 inches for the "four" on 34 x 4-inch tires, and 128 inches on 36 x 4½-inch tires for the "six."

Prices—"Four": Roadster and five-passenger touring car, $1,550; coupelette, $1,950; sedan, $2,350; limousine, $3,000. "Six": Roadster and five-passenger touring car, $2,250; six-passenger touring, $2,300; Sedan, $3,250; limousine, $3,700.

Changes from Previous Construction—High-speed block motor in the "four"; enclosed valves; four-speed gearset; left drive with center control; self-contained oiling system with pressure pump; full-floating rear axle; demountable rims.

Selling Features—U. S. L. electric lighting and engine starting system; Daimler-type flexible leather coupling between clutch and gearset; rear axle and gearset running in imported ball bearings; Spicer universal joints in drive shaft; nickel steel axle and drive shafts; efficiency of motor and ease of operation.

Equipment—Top with boot and curtains; windshield; speedometer; U. S. L. electric lighting and engine starting system; robe and foot rails; demountable rims; pump; jack; tools; tire repair kit.

Keeton—Keeton Motor Co., Detroit, Mich.

Models—Six models on one six-cylinder chassis having cylinders measuring 3¾ x 5½ inches. Transmission elements include cone-disk clutch, four-speed gearset with direct on third, shaft drive to bevel gears in full-floating axle. Wheelbase is 136 inches on 34 x 4½-inch tires on wire wheels.

Prices—Roadster and touring, $3,250; coupe, $3,500; Berline limousine, $3,975; cabriolet, $3,350; phaeton, $3,500.

Changes from Previous Construction—Bore increased; pump circulation adopted; automatic advance Eisemann magneto adopted; road clearance increased; three new bodies added.

Selling Features—Distinctive "Frenchy" appearance; electric light unit starting and lighting system; wire wheels; four-speed gearset with direct on third; top cover incorporated on back of top.

Equipment—Top with boot and Jiffy curtains; windshield; speedometer; electric lighting and engine starting system; electric horn; extension lamp; wire wheels with one extra; wheel carrier; gasolene gauge; tools; tire repair kit; pump; jack; foot and robe rails.

King—King Motor Car Co., Detroit, Mich.

Models—Two models on one four-cylinder chassis having L-head cylinders measuring 3⅞ x 5 inches. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in full-floating rear axle. Wheelbase is 112 inches on 33 x 4-inch tires.

Prices—Roadster or five-passenger touring, $1,095.

Changes from Previous Construction—Bore of motor increased from 3¾ to 3⅞ inches; stroke remains 5 inches; cylinders cast in a block instead of in pairs; compression raised; motor built in own plant.

Selling Features—Cantilever rear springs; long-stroke motor; unit power plant; left steer with center control; electric lighting; three-point suspension; full-floating rear axle; 18-inch steering wheel; disk clutch; roomy body.

Equipment—Top with boot and curtains; Stewart-Warner speedometer; windshield; electric horn; tire carriers; jack; pump; tools; tire repair kit; demountable rims with one extra.

Kissel—Kissel Motor Car Co., Milwaukee and Hartford, Wis.

Models—Five models on each of two six-cylinder and one four-cylinder chassis. "Four" cylinders measure 4½ x 5¼, as do those of the larger "six." Smaller "six" cylinders measure 3¾ x 5½ inches. Wheelbases are 131 inches on 36 x 4-inch tires for the "four"; 132 inches on 36 x 4½-inch tires for the smaller "six"; and 142 inches on 37 x 5-inch tires for the larger "six." Transmission elements include cone clutches, four-speed gearsets with direct drive on third, and shaft drive to bevel gears in floating type rear axles.

Prices—"Four": Open bodies, $1,850; coupe, $2,850. Larger "six": Open bodies, $3,150; Berline-limousine, $4,900; limousine, $4,650. Smaller "six": Open bodies, $2,350; limousine, $3,850; Berline-limousine, $4,100.

Changes from Previous Construction—Left drive with center control adopted; wheelbases lengthened; tonneaux made roomier; one each four- and six-cylinder models are new throughout, details and prices to be announced later.

Selling Features—Four- and six-cylinder motors; accessibility of power plant; individuality of appearance; commodious seats; liberal wheelbase; low frame; flexible springs fitted with shock absorbers; electric lighting and starting equipment; simplicity of chassis.

Equipment—Mohair top and cover; windshield integral with body; Connecticut shock absorbers, front and rear; demountable rims, one extra; Warner speedometer; double tire irons on rear; robe and foot rails; horn; jack; pump; kit of tools; tire repair outfit.

Kline—Kline Motor Car Corp., Richmond, Va.

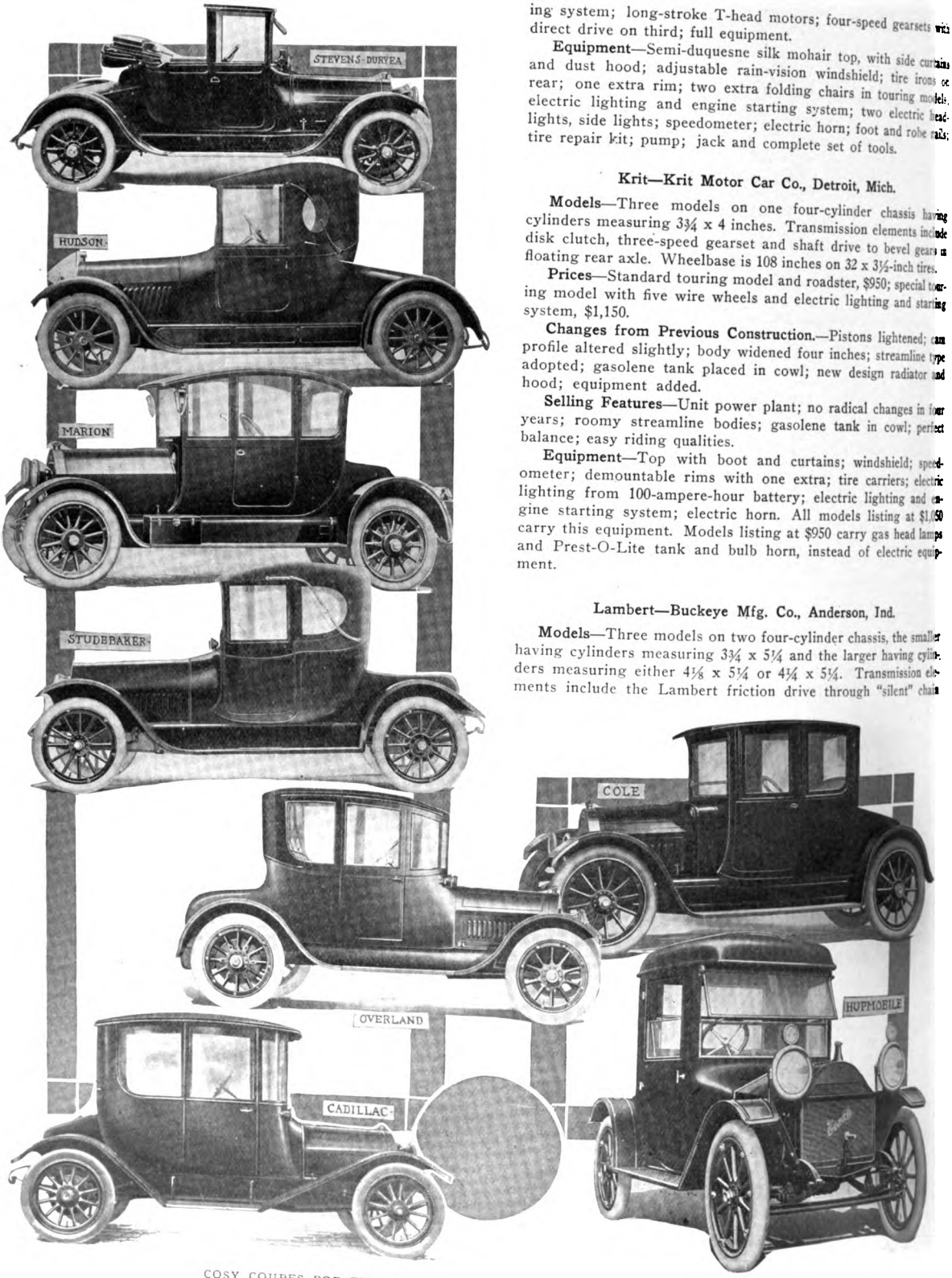
Models—Fourteen models on two four- and two six-cylinder chassis. Smaller four-cylinder motor has L-head cylinders measuring 4 x 4⅝; other motors all have T-head cylinders, "four" measuring 4 5/16 x 5¾, smaller "six," 4⅛ x 5½, and larger "six," 4 5/16 x 5¾. Transmission elements include cone clutches four-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 115 inches on 34 x 4 tires for the smaller "four"; 120 inches on 36 x 4 tires for the larger "four"; 128 inches on 37 x 4½-inch tires for the smaller "six"; and 133 inches on 37 x 5-inch tires for the larger "six."

Prices—Smaller "four": Four- and five-passenger touring, $1,685; larger "four": roadster and touring, $1,985; coupe, $2,585; smaller "six": Roadster and touring, $2,585; coupe, $3,200; larger "six": roadster and touring, $2,985; coupe, $3,500.

Changes from Previous Construction—Left drive with center control; Turkish upholstery; dual ignition; electric horn; water jacketed intake; hot air connection to carburetter.

Selling Features—Independent electric lighting and engine start-

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COSY COUPES FOR TWO OR THREE, ALSO SOME OF THE NEW CABRIOLETS

ing system; long-stroke T-head motors; four-speed gearsets with direct drive on third; full equipment.

Equipment—Semi-duquesne silk mohair top, with side curtains and dust hood; adjustable rain-vision windshield; tire irons on rear; one extra rim; two extra folding chairs in touring models; electric lighting and engine starting system; two electric headlights, side lights; speedometer; electric horn; foot and robe rails; tire repair kit; pump; jack and complete set of tools.

Krit—Krit Motor Car Co., Detroit, Mich.

Models—Three models on one four-cylinder chassis having cylinders measuring 3¾ x 4 inches. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in floating rear axle. Wheelbase is 108 inches on 32 x 3½-inch tires.

Prices—Standard touring model and roadster, $950; special touring model with five wire wheels and electric lighting and starting system, $1,150.

Changes from Previous Construction.—Pistons lightened; cam profile altered slightly; body widened four inches; streamline type adopted; gasolene tank placed in cowl; new design radiator and hood; equipment added.

Selling Features—Unit power plant; no radical changes in four years; roomy streamline bodies; gasolene tank in cowl; perfect balance; easy riding qualities.

Equipment—Top with boot and curtains; windshield; speedometer; demountable rims with one extra; tire carriers; electric lighting from 100-ampere-hour battery; electric lighting and engine starting system; electric horn. All models listing at $1,150 carry this equipment. Models listing at $950 carry gas head lamps and Prest-O-Lite tank and bulb horn, instead of electric equipment.

Lambert—Buckeye Mfg. Co., Anderson, Ind.

Models—Three models on two four-cylinder chassis, the smaller having cylinders measuring 3¾ x 5¼ and the larger having cylinders measuring either 4⅛ x 5¼ or 4¼ x 5¼. Transmission elements include the Lambert friction drive through "silent" chain

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to floating rear axle. Wheelbases are 112 inches on 32 x 3½ for the smaller and 117 inches for the larger.

Prices—Smaller model five-passenger touring, $1,200; larger model roadster, $1,365; touring, $1,395.

Changes from Previous Construction—The smaller car is new throughout though it does not differ in essentials from the larger. In the larger model: Steering gear shifted to left with center control; gasolene tank placed in cowl; option offered of either Continental or Rutenber motors in both.

Selling Features—Lambert friction transmission; choice of either Continental or Rutenber motors; left drive with center control; "silent" chain drive; full-elliptic rear springs; electric lighting and engine starting equipment; low price.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting system; coat and robe rails; wheelpuller; tools; tire repair kit; pump; jack; horn.

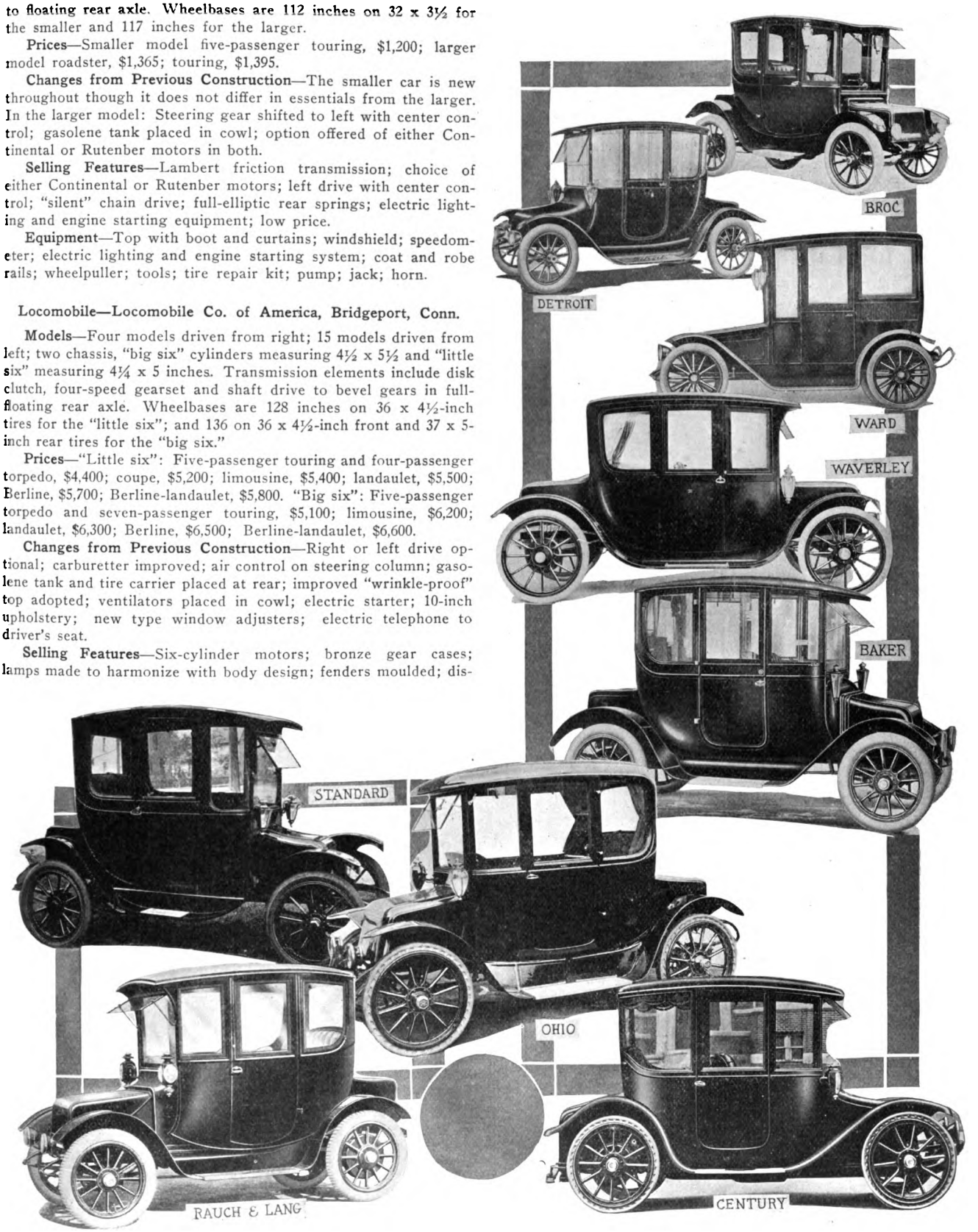
Locomobile—Locomobile Co. of America, Bridgeport, Conn.

Models—Four models driven from right; 15 models driven from left; two chassis, "big six" cylinders measuring 4½ x 5½ and "little six" measuring 4¼ x 5 inches. Transmission elements include disk clutch, four-speed gearset and shaft drive to bevel gears in full-floating rear axle. Wheelbases are 128 inches on 36 x 4½-inch tires for the "little six"; and 136 on 36 x 4½-inch front and 37 x 5-inch rear tires for the "big six."

Prices—"Little six": Five-passenger touring and four-passenger torpedo, $4,400; coupe, $5,200; limousine, $5,400; landaulet, $5,500; Berline, $5,700; Berline-landaulet, $5,800. "Big six": Five-passenger torpedo and seven-passenger touring, $5,100; limousine, $6,200; landaulet, $6,300; Berline, $6,500; Berline-landaulet, $6,600.

Changes from Previous Construction—Right or left drive optional; carburetter improved; air control on steering column; gasolene tank and tire carrier placed at rear; improved "wrinkle-proof" top adopted; ventilators placed in cowl; electric starter; 10-inch upholstery; new type window adjusters; electric telephone to driver's seat.

Selling Features—Six-cylinder motors; bronze gear cases; lamps made to harmonize with body design; fenders moulded; dis-



QUIET-RUNNING, WEATHER-DEFYING ELECTRICS IN SEVEN NEW BODY STYLES

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tinctive type top and bows; silver-tone nickel finish; improved tire bracket; option of left or right drive; 10-inch upholstery; balance of weight; durability and reliability.

Equipment—Top with boot and curtains; electric lighting and engine starting system; speedometer; windshield; electric horn; air compressor; specially designed lamps; quick detachable tires mounted on demountable rims with two extras; tire carriers; swinging-type robe rail; folding foot rest; extension lamp; floor covering; tools; tire repair kit; priming device.

Lexington and Howard—Lexington-Howard Co., Connersville, Ind.

Models—Three models on one four- and one six-cylinder chassis, the "four" having cylinders measuring 4 x 5 inches.

Prices—"Four": Roadster and five-passenger touring, $1,295.

Equipment—Complete, including electric lighting and engine starting system.

Lozier—Lozier Motor Co., Detroit, Mich.

Models—One model on four-cylinder chassis and three on six-cylinder chassis. Both motors have L-head cylinders, the "four" measuring 4¼ x 6½ inches and the "six" 3⅞ x 5½ inches. Transmission elements include disk clutches, three-speed gearset in the "six" and four-speed with direct drive on third in the "four," shaft drive to bevel gears in full-floating rear axles. Wheelbases are 120 inches on 36 x 4½-inch tires in the "four"; 127½ inches on 36 x 4½ tires in the "six."

Prices—"Four" chassis: Five- and seven-passenger touring, $2,100. "Six" chassis: Roadster and touring models, $3,250; limousine, $4,450.

Changes from Previous Construction—The "four" is new throughout and is exhibited for the first time. In the "six": Weight reduced 300 pounds; new top; new silent floating rear axle; direct drive through rear springs; tire pump added; rebound absorbers on front axle; new "one-hand" windshield; moulded fenders; head light dimmers; extra long foot rail; cloth timing gears in motor.

Selling Features—In the "six": Light weight (3,845 pounds with all tanks filled and equipment in place); fuel economy; drive through rear springs; new rear axle of full-floating type; quick acceleration; accessibility; Bosch ignition; Gray & Davis lighting and starting. In the "four": Block motor; removable cylinder head; large valves; chain timing drive; hot air tube to carburetter; flywheel pressure lubrication; disk clutch; four-speed gearset with direct on third; electric lighting and starting; platform rear springs; left drive with center control; clear running boards.

Equipment—Top with boot and curtains; windshield; speedometer; clock; electric lighting and starting system; power tire pump; demountable rims with one extra and tire carriers; chain tread rear tires; rebound snubbers; trunk rack; robe and foot rails; tools; tire repair kit; horn; jack.

Lyons-Knight—Lyons-Atlas Co., Indianapolis, Ind.

Models—Four models on one four-cylinder Knight-engined chassis; cylinders measure 4½ x 5½ inches and are in pairs. Transmission elements include three-plate clutch, three-speed gearset and shaft drive to underhung worm gear in full-floating rear axle. Wheelbase is 130 inches on 37 x 5-inch tires.

Prices—Five-passenger touring, $2,900; seven-passenger, $2,980; Sedan, $3,900; Berline-limousine, $4,300.

Changes from Previous Construction—Practically a new car; first time exhibited.

Selling Features—Knight engine; worm-driven rear axle; long sleeve travel in motor; force-feed oiling; tubular connecting rods; electric engine starter; cowl gasolene tank; left drive with center control; rear axle gearset; long springs; sheet aluminum bodies; Turkish upholstery; complete equipment.

Equipment—Top with boot and curtains; Warner speedometer; clock; combined tire holder and trunk rack at rear; demountable rims with two extras; electric lighting and engine starting system; electric horn; robe and foot rails; jack; pump; tools; tire repair kit.

McCord—McCord Automobile Co., Chicago, Ill.

Models—One model on one four-cylinder chassis having cylinders measuring 3¾ x 5½ inches. Transmission elements include disk clutch, selective gearset and shaft drive to bevel gears in floating rear axle. Wheelbase is 110 inches.

Price—Not yet determined.

Changes from Previous Construction—The car is new throughout and is exhibited for the first time.

Selling Features—Light weight; disk clutch; Rutenber power plant; Weston-Mott rear axle; Imperial wheels; electric starter; three-point motor suspension.

Equipment—Complete.

McFarlan—McFarlan Motor Co., Connersville, Ind.

Models—Seven models on one four-cylinder chassis with option of T-head motor measuring 4 x 6 inches or 4½ x 6 inches. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in full-floating rear axle. Wheelbase is 128 inches and tires measure 36 x 4½ inches.

Prices—Open cars with smaller motor, $2,590; with larger motor, $2,900. Berline-limousine with smaller motor, $4,000; with larger motor, $4,310. Coupe with smaller motor, $3,300; with larger motor, $3,610.

Changes from Previous Construction—Left drive with center control; wheelbase lengthened four inches; three-quarter elliptic underslung rear springs adopted; streamline bodies added; ball bearings in steering knuckles; slower speed electric generator; double filament head lamps; new air pump; Gray pneumatic gear shift optional equipment.

Selling Features—Gray npeumatic gear shift as optional equipment; comparatively short wheelbase; option of two motors; underslung three-quarter elliptic rear springs; correct weight distribution; simplicity and accessibility; strength of parts; flexibility; block-cast cylinders; rear axle gearset; Mea magneto; disk clutch running in oil; cylindrical gasolene tank; left drive with center control; pneumatic engine starter; electric lighting system.

Equipment—Top with boot and Collins curtains; windshield; speedometer; pneumatic engine starter; electric lighting system; shock absorbers; cigar lighter; demountable rims; tire carriers; tools; tire repair kit; power pump; jack; horn.

McIntyre—W. H. McIntyre Co., Auburn, Ind.

Models—One model on one six-cylinder chassis having cylinders measuring 3½ x 4½ inches. Transmission elements include disk clutch, four-speed gearset and shaft drive to bevel gears in floating type rear axle. Wheelbase is 128 inches in 34 x 4½-inch tires.

Price—Touring model, $1,485. With Westinghouse electric starter and lighter and automatic priming equipment, $1,635.

Changes from Previous Construction—The car is new throughout and is exhibited for the first time.

Selling Features—Six cylinders; four speeds; unit power plant; three-point suspension; all steel chassis construction; weight with tanks full, 2,850 pounds (and 40 horsepower); central single lever control; starter; center of gravity on line with hubs; straight lines; clearance at lowest point, 11 inches; inside door latches; up-to-date invisible coil with lock switch; enclosed valves; concealed hinges.

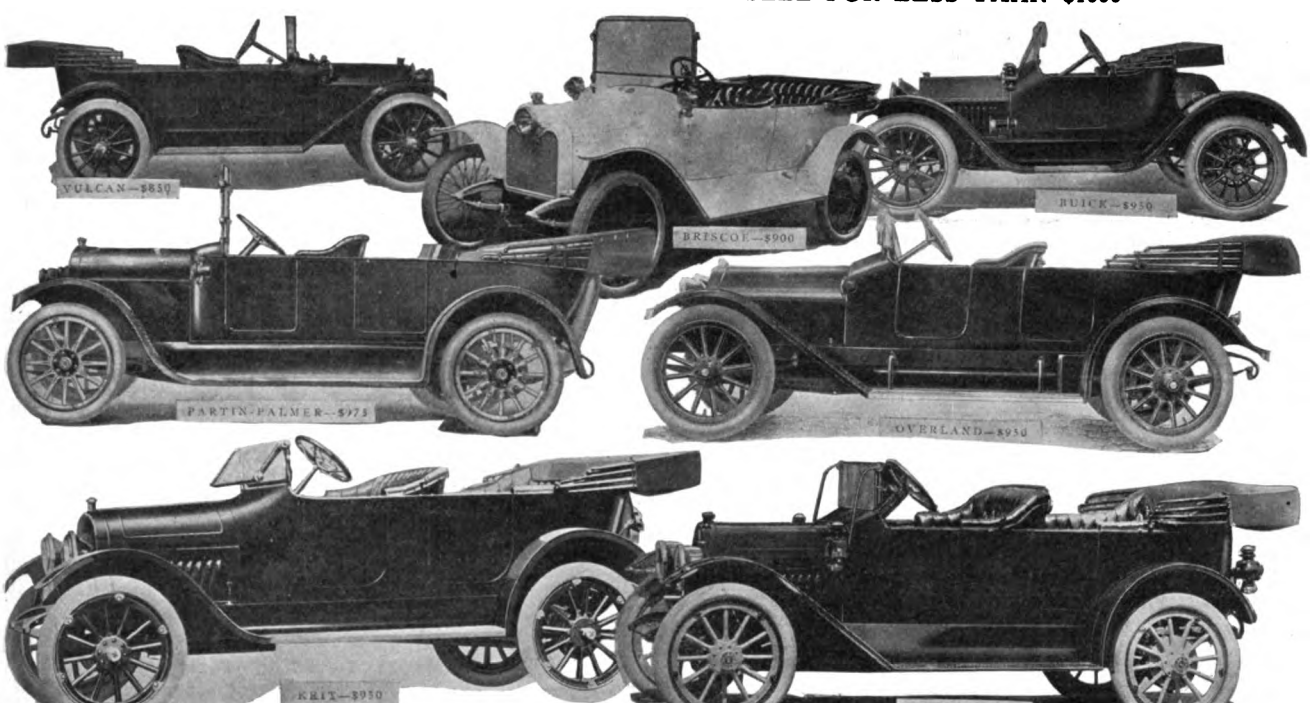
Equipment—Mohair top with dust hood; nickel folding windshield; electric signal; demountable rims; spare tire carrier; extra rim; license bracket; limit straps; nickel footrail; robe rail; nickel and black enamel gas headlights, side and tail lights; automatic jump spark lighter; gas tank; speedometer with trip attachment; dash clock; starter; tire pump; jack; tire repair kit; tools; dust cover for entire car.

Marion—Marion Motor Car Co., Indianapolis, Ind.

Models—Five models on six-cylinder chassis and four on four-cylinder chassis. Both motors have L-head cylinders, the "four" measuring 4 x 5 and the "six" 3¾ x 5¼ inches. Transmission elements include dry-plate clutch and three-speed gearset in the

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SEVEN OF THE ATTRACTIVE CARS THAT SELL FOR LESS THAN $1000



"six" and cone clutch with three-speed gearset in the "four." Both have full-floating rear axles with flange drive. Wheelbases are 117 inches in the "four" on 34 x 4 tires, and 124 inches on 35 x 4½-inch tires for the "six."

Prices—"Six" roadster, special roadster and five-passenger car, $2,150; coupe, $2,650; sedan, $2,950. "Four" roadster, special roadster and five-passenger, $1,650; coupe, $2,150.

Changes from Previous Construction—The "six" is new throughout, as are all the enclosed bodies. In the "four," the wheelbase has been lengthened; full-floating rear axle; imported spring steel; large clutch.

Selling Features—Westinghouse electric lighting and engine starting system; powerful motors; economy of operation; full-floating rear axles with flange drive; Sheffield steel springs; Turkish upholstery; self-lubricating spring bolts; wiring system; special strapless tire holder; roominess of bodies; left drive and center control.

Equipment—Top with boot and curtains; windshield; Stewart speedometer; Westinghouse electric lighting and engine starting system; electric horn; demountable rims with one extra; tire carriers; tools; pump; jack; tire repair kit; foot and robe rails.

Maxwell—Maxwell Motor Co., Detroit, Mich.

Models—Three models on two four- and one six-cylinder chassis. All motors are L-head, block cast, the smaller "four" having cylinders measuring 3⅝ x 4, the larger "four" 4 x 4¾, and the "six" 4⅛ x 4¾. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in full-floating axle in the "six," semi-floating in the larger four and three-quarter floating in the smaller "four." Wheelbases are 103 inches on 30 x 3½-inch tires for the smaller "four"; 111 inches on 33 x 4-inch tires for the larger "four"; and 130 inches on 36 x 4½-inch tires for the "six."

Prices—"Six": Seven-passenger touring, $1,975. Larger "four" touring, $1,225; smaller "four" touring, $750.

Changes from Previous Construction—"Six": Optional right or left drive. Large "four": Electric starter added. Smaller "four": Slight change in carburetter and installation of tire irons and front and rear dust shields.

Selling Features—"Six": Size, equipment and price; optional right or left steering. Larger "four": Roomy body; easy riding qualities; electric starting; complete equipment. Smaller "four": Block motor of liberal dimensions; three-speed selective gearset; three-quarter floating rear axle; cone clutch; large tires; big body; 103-inch wheelbase; equipment.

Equipment—Smaller "four": Top with boot and Jiffy curtains; windshield; speedometer; horn; tire holders; Prest-O-Lite tank and tools. Larger "four" has in addition: Electric lighting and starting system; electric horn. "Six" has in addition: Demountable rims with extra tire carriers; trouble lamp and cigar lighter. All have the usual tools; pump; jack; tire repair kit, etc.

Metz—Metz Co., Waltham, Mass.

Models—Two models on one four-cylinder chassis having cylinders measuring 3¾ x 4 inches. Transmission elements include the Metz friction system with double side chain drive to rear wheels. Wheelbase is 90 inches and tires measure 30 x 3 inches.

Price—Roadster model, $475.

Changes from Previous Construction—Practically no mechanical alteration.

Selling Features—Extreme simplicity of chassis and friction transmission system; block motor with detachable cylinder head; full equipment.

Equipment—Extension top with cover; windshield; gas lamps and generator; tools; horn; pump; tire repair kit.

Mercer—Mercer Automobile Co., Trenton, N. J.

Models—Four models on two four-cylinder chassis; both have T-head motors, the smaller having cylinders measuring 4⅜ x 5 inches and the larger 4½ x 5 inches. Transmission elements include disk clutches and four-speed gearsets with drive to bevel gears in floating type rear axles. Wheelbases are 108, 118 and 124 inches, according to body style.

Prices—Raceabout on smaller chassis minus electrical equipment, $2,600. On larger chassis with complete equipment: Roadster and four-passenger touring, $2,900; five-passenger touring, $3,000.

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Changes from Previous Construction—Five-passenger touring model and roadster are new, though they do not depart from previous construction and only minor alterations have been made in the others.

Selling Features—Slow-speed T-head motor; four-speed gearset; transmission brakes; large valves; light reciprocating parts; concentric piston rings; disk clutch; right-hand control.

Equipment—Top with boot and curtains; windshield; speedometer; electric horn; Rushmore electric lighting and engine starting system; Hartford shock absorbers; demountable rims with tire carriers; pump; jack; tools; tire repair kit.

Mitchell—Mitchell-Lewis Motor Co., Racine, Wis.

Models—Three models on "big six" and three on "little six" and two on four-cylinder chassis; all motors are T-head and all have 4¼-inch bore; "big six" and "four" have 7-inch stroke; "little six" has 6-inch stroke, with 7-inch stroke optional. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axle. Wheelbases are 144 inches on 37 x 5 tires for the "big six"; 132 inches on 36 x 4½ tires for the "little six"; and 120 inches on 36 x 4½ tires for the "four."

Prices—"Big six": Seven-passenger touring, $2,350; "little six": five-passenger touring or roadster, $1,895; "four," roadster or five-passenger touring, $1,595.

Changes from Previous Construction—Shallower valve chambers; motor supported by six feet; piston tops flat instead of cupped; piston pin diameter increased; distribution gear case redesigned and fan driven by endless canvas belt; carburetter mounted closer to manifold; ignition switch placed on cowl board; electric starter moved to gear box; clutch now a steel stamping instead of aluminum; gear shafts square instead of splined; gear box smaller; rear axle simplified and inspection hole provided; brake rods pass over instead of under the axle; springs lengthened; Cowlboards added to bodies; tire carried at rear.

Selling Features—Exceptionally long stroke motors; option of stroke lengths in light "six"; left drive with center control; electric lighting and engine starting; gravity gasolene feed; long wheelbase; roomy, streamline bodies; Timken wheel bearings; full-floating rear axles; large tires; luxurious upholstery; nickel trimmings; complete equipment.

Equipment—Silk mohair top with boot and quick-adjustable curtains; windshield; speedometer; Remy electric lighting and engine starting system; electric trouble lamp; robe and foot rails; demountable rims; tire carriers; tools; jack; pump; horn; tire repair kit.

Moline-Knight—Moline Automobile Co., Moline, Ill.

Models—One model on one four-cylinder Knight engined chassis with cylinders measuring 4 x 6. Transmission elements include cone clutch, three-speed gearset and bevel gear drive to floating rear axle. Wheelbase is 126 inches and tires measure 36 x 4½.

Prices—Touring model, $2,400.

Changes from Previous Construction—Knight engined model is new throughout.

Selling Features—Knight engine; lowest-priced Knight engined car; only Knight engine in America with block cast cylinders and thermo-siphon cooling; single chassis with one body accommodating either five or seven passengers; integral intake and exhaust manifolds; removable cylinder head; cone-shaped cylinder heads with cupped pistons; hollow connecting rods; forced feed oiling system; bearings devoid of oil slots; breather pipe serves also as oil filler and fan standard; electric lighting and starting; roomy body; high sides.

Equipment—Mohair top with boot and side curtains; rain-vision windshield; electric horn; power tire pump; oil and gasolene gauges; Wagner electric lighting and engine starting system; Warner speedometer and eight-day clock; Firestone demountable rims; robe and foot rails; tools; tire repair kit; jack.

Moon—Moon Motor Car Co., St. Louis, Mo.

Models—Eight models on one four- and one six-cylinder chassis, the "four" having cylinder measuring 4½ x 5 inches and the "six" 3¾ x 5¼ inches. Transmission elements include disk clutches, three-speed gearset in the "four" and four-speed in the "six," shaft drive to bevel gears in floating rear axles. Wheelbases are 129 inchs on 35 x 4½-inch tires for the "six" and 118 inches on 34 x 4-inch tires for the "four."

Prices—"Four": Speedster, roadster, torpedo and touring, $1,750; coupe, $2,350. "Six": Speedster and roadster, $2,150; six- and seven-passenger touring, $2,225; coupe, $2,750.

Changes from Previous Construction—Delco electric lighting, ignition and starting systems adopted for all models; pressure feed with gasolene tank and tire irons at the rear.

Selling Features—Streamline bodies; Delco equipment; light weight; large doors; special windshield; clear running boards; rear gasolene tank and tire irons; low body; four-speed gearset.

Equipment—Top with boot and curtains; windshield; speedometer; Delco electric lighting and engine starting system; power tire pump; electric horn; demountable rims; tools; tire repair kit; jack.

National—National Motor Vehicle Co., Indianapolis, Ind.

Models—Eight models on four-cylinder chassis and two on six-cylinder chassis. "Four" motor measures 4⅞ x 6 inches and the "six" 3¾ x 5½ inches. Transmission elements include cone clutches three-speed gearsets and shaft drive to bevel gears in full-floating rear axles. Wheelbases are 120 to 128 inches for the "four," according to body style, on 34 x 4½ tires for Speedway roadster; 36 x 4½ for touring and 36 x 5 on closed cars. On the "six," 132 inches on 36 x 4½-inch tires.

Prices—"Four": Semi-racing roadster, $2,750; speedway roadster, $3,150; four- and five-passenger touring, $3,300; seven-passenger, $3,400; coupe, $3,500; Sedan, $4,600; limousine, $4,800. "Six": Four- and five-passenger open bodies, $2,375.

Changes from Previous Construction—Practically no alterations in the "four" chassis. "Six" is new throughout and is exhibited for the first time.

Selling Features—New six-cylinder model; block-cast cylinders; long-stroke, high-speed motor; left drive with center control, all models; Deaco electric lighting and engine starting system; cone clutch of large diameter; three-speed gearsets; full-floating rear axles; power; speed; National cantilever springs in "six"; light weight; larger bearings.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting system; power tire pump; electric horn; demountable rims; tire carriers; tools; tire repair kit; jack.

Norwalk—Norwalk Motor Car Co., Inc., Martinsburg, W. Va.

Models—Five models on two six-cylinder underslung chassis with T-head motors measuring 4 x 5½ and 3⅞ x 5 inches, respectively. Transmission elements include disk clutches, four-speed gearsets with electric control, bevel drive and full-floating rear axles. Wheelbases are 131 inches with 37 x 4 tires and 136 inches with 39 x 5 tires.

Prices—Smaller chassis with either two or four-passenger body, $2,685; larger chassis with either two-, four- or six-passenger body, $3,500.

Changes from Previous Construction—Adoption of four-speed gearset with Vulcan electric gear shift; adoption of emergency brake electric lock.

Selling Features—Underslung frame; maximum tire and gasolene mileage; silence and flexibility; electric gear shift; electric emergency brake lock; ease of control; geared up fourth speed; three-point motor suspension; electric lighting system.

Equipment—Top with boot and side curtains; windshield; speedometer and clock combination; electric horn; electric lighting system; electric gear shifter; demountable rims with one extra and tire carriers; shock absorbers; inspection lamp; tools; tire repair kit; pump and jack.

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Oakland—Oakland Motor Car Co., Pontiac, Mich.

Models—Ten models on two four- and two six-cylinder chassis. "Fours" measure 3½ x 5 inches and 4¼ x 5¼ inches, respectively; "sixes" measure 3½ x 5 inches and 4⅛ x 4¾ inches, respectively. Transmission elements include cone clutches, three-speed gearsets and shaft drive to bevel gears in semi-floating rear axle in the smaller "four" and full-floating rear axle in the others. Wheelbases are 112 inches on 33 x 4-inch tires in smaller "four"; 116 inches on 35 x 4½-inch tires for larger "four"; 123½ inches on 35 x 4½-inch tires for the smaller "six"; and 130 inches on 34 x 4½-inch tires for the larger "six."

Prices—Smaller "four": Five-passenger touring, $1,200; cabriolet, $1,585; roadster, $1,150. Larger "four": Five-passenger touring, $1,785; coupe, $2,500; Sedan, $2,600. Smaller "six": Five-passenger touring, $1,785. Larger "six": Four-, five- and seven-passenger touring, $2,450.

Changes from Previous Construction—Larger tires; Delco electric lighting and engine starting systems; left drive with center control for smaller "six" and "four"; larger "four" motor increased in dimensions from 4⅛ x 4¾.

Selling Features—Simplicity; accessibility; beauty; power; six-cylinder motors; large size of "light six" model; elimination of greatest possible amount of friction; rear gasolene tanks; underslung rear springs, large brakes; Delco electric lighting, engine starting and ignition systems.

Equipment—Top with boot and curtains; windshield; speedometer; Delco electric lighting and engine starting system; demountable rims with one extra and tire carriers; electric horn; tools; tire repair kit; pump; jack; robe and foot rails.

Ohio—Crescent Motor Co., Cincinnati, O.

Models—Three models on one four- and one six-cylinder chassis. Both motors have T-head cylinders, the "four" measuring 4¼ x 4¾ and the "six" 4 x 6. Transmission elements include disk clutches, three-speed gearset in the "four" and four-speed in the "six," shaft drive to bevel gears in floating rear axles. Wheelbases are 116 inches on 34 x 4-inch tires in the "four" and 132 inches on 35 x 4½-inch tires for the "six."

Prices—"Four": Roadster or five-passenger touring, $1,275. "Six": Five-passenger touring, $1,985.

Changes from Previous Construction—Both cars are new throughout and are exhibited for the first time.

Selling Features—Northway T-head motors; full-floating rear axles; left steer with center control; screw and nut steering gear; equalized brakes; cowl gasolene tank; disk clutches; electric lighting and engine starting system; flexible springs; luxurious upholstery; full equipment.

Equipment—Top with boot and curtains; windshield; speedometer; Jesco electric lighting and engine starting system; demountable rims; tire carriers; tools; tire repair kit; pump; jack; foot and robe rails.

Oldsmobile—Olds Motor Works, Lansing, Mich.

Models—Three models on one six-cylinder chassis with L-head cylinders measuring 4¼ x 5¼ inches. Transmission elements inclue cone clutch, three-speed gearset, shaft drive to bevel gears in floating rear axle. Wheelbases are 132 and 139 inches on 36 x 5-inch tires.

Prices—Four- and five-passenger phaeton, $2,975; seven-passenger touring, $3,150.

Changes from Previous Construction—Motor dimensions changed from 4⅛ x 4¾ to 4¼ x 5¼; valves enlarged; centrifugal instead of gear pump; tires and gasolene tank at rear; brake size increased.

Selling Features—Single chassis of two wheelbase lengths; six-cylinder motor; triple cast cylinders; aluminum toe and heel boards; plate glass windshield; long-grain, hand-buffed leather; laminated wood steering wheel; natural horsehair carpet; honeycomb type radiator; solid top bows; Jiffy curtains; Baker rims; beautiful finish.

Equipment—Top with boot and curtains; speedometer and clock; windshield; Baker demountable rims with one extra; tire carriers; power tire pump; Delco electric lighting, ignition and starting system; trouble lamp; patent bow separators; tools; jack; Klaxon horn; tire repair kit; Gabriel rebound snubber on rear springs.

Overland—Willys-Overland Co., Toledo, O.

Models—Three models on one four-cylinder chassis having L-head cylinders measuring 4⅛ x 4½ inches. Transmission elements include cone clutch, three-speed gearset and shaft drive to bevel gears in three-quarter floating rear axle. Wheelbase is 114 inches on 33 x 4-inch tires.

Prices—Roadster or touring car without electric lights and starter, $950; with electric lighting and starting system, $1,075; coupe, $1,550.

Changes from Previous Construction—Motor dimensions increased from 4 x 4½; wheelbase lengthened four inches; lubrication system refined; sight feed located on dash; rotary pump added; equipment added.

Selling Features—Long wheelbase; powerful motor; rear axle gearset; three-quarter floating rear axle; large brakes; low price; flexible springs.

Equipment—Top with boot and curtains; windshield; speedometer; electric lights; storage battery; electric horn; tire carriers; tools; tire repair kit; pump; jack. Electric lighting and engine starting system where specified and at additional cost.

Packard—Packard Motor Car Co., Detroit, Mich.

Models—Twenty models on each of two six-cylinder chassis. Both motors have L-head cylinders, the smaller measuring 4 x 5½ inches and the larger 4½ x 5½ inches. Transmission elements include Packard dry-plate clutch, three-speed gearset and shaft drive to worm-bevel gear differentials in floating-type rear axles. Wheelbases are 121½ to 139 for larger "six," according to body, on 36 x 4½-inch front tires and 37 x 5 rear tires; 140 inches in smaller "six" on same size tires.

Prices—Larger "six": Touring, $4,850; phaeton runabout, $4,700; phaeton, $4,750; runabout, $4,650; limousine and landaulet $5,900; imperial limousine, $6,100; salon limousine, $6,050; cabette $5,800; brougham, $5,900; salon brougham, $5,850; coupe, $5,400 imperial coupe, $5,600. Smaller "six": Six- or seven-passenger touring, $3,850; special touring, $3,350; phaeton and runabout, $3,750; limousine with cab sides, $5,000; limousine, $4,950; landaulet, $4,950; landaulet with cab sides, $5,000; imperial limousine, $5,150; salon limousine, $5,100; brougham, $5,000; salon brougham, $4,950 coupe, $4,450; seven-passenger convertible body, $4,525.

Changes from Previous Construction—Cylinders cast in threes; lubrication manifolds enclosed; enclosed ignition wiring; worm bevel driving gears in rear axle; one-man top adopted; auxiliary lubricating system forcing oil direct to cylinder walls.

Selling Features—Worm bevel driving gears; one-man top; enclosed oil and ignition leads; centralized control mechanism; left steering; line of 20 bodies.

Equipment—One-man top with boot and side curtains which open with doors; Packard windshield; electric lighting and engine starting system; acetylene primer with tank; demountable rims with two extra; tools; jack; pump; tire repair kit; horn.

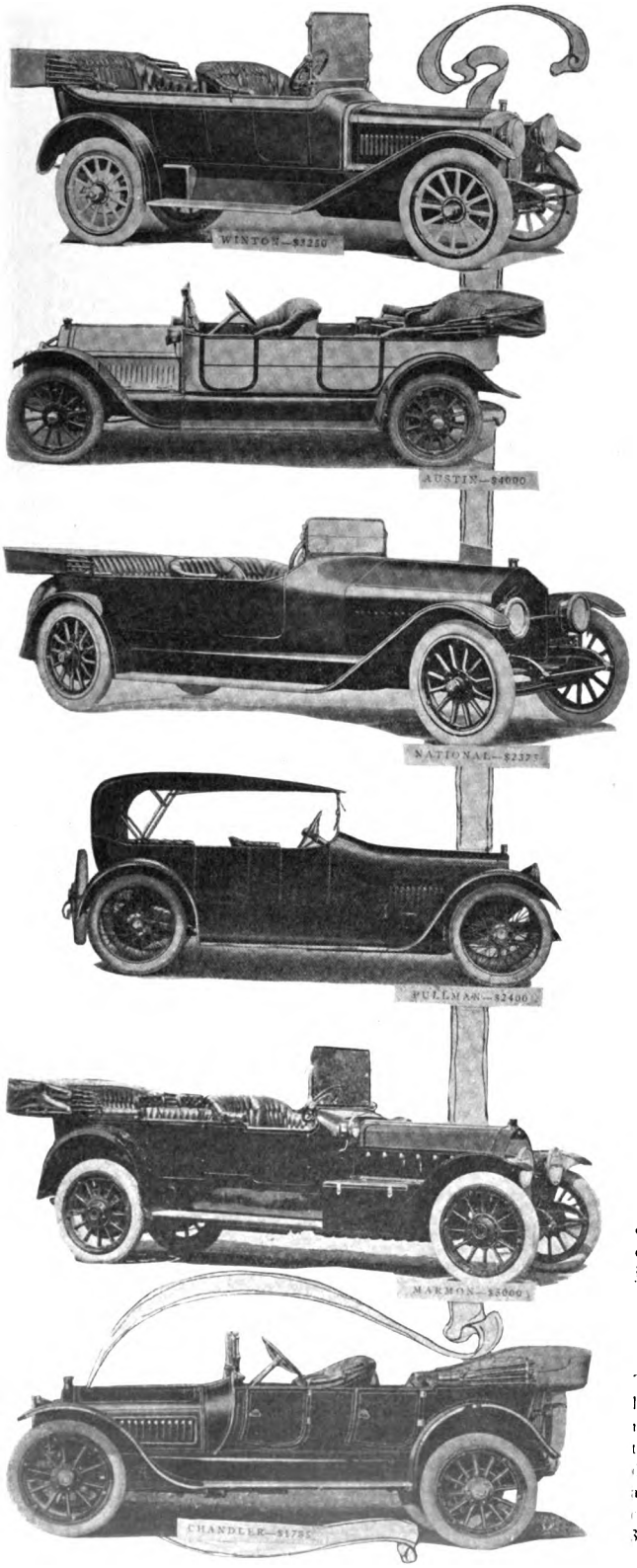
Paige-Detroit—Paige-Detroit Motor Car Co., Detroit, Mich.

Models—Seven models on two four-cylinder chassis. Both motors have L-head cylinders, the smaller measuring 3¾ x 4 inches and the larger 4 x 5 inches. Transmission elements include disk clutches and three-speed gearsets with shaft drive to bevel gears in floating type rear axles. Wheelbases are 110 inches on 32 x 3½-inch tires for the smaller and 116 inches on 34 x 4-inch tires for the larger.

Prices—Smaller chassis: Three-passenger roadster or five-passenger touring, $950. Larger chassis: Two- and three-passenger roadster and five-passenger touring, $1,275; four-passenger coupe, $1,850; five-passenger Sedan, $1,950.

Changes from Previous Construction—Streamline bodies and

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"SIXES" IN WHICH THERE IS NO SAMENESS

speedster model added for larger chassis; few other alterations.

Selling Features—Block motors; chain timing gear; disk clutch; selective gearset; left drive with center control; cowl gasoline tank; electric lighting and engine starting system; Bosch high-tension ignition; full-elliptic rear springs.

Equipment—Top with boot and curtains; windshield; Stewart speedometer; Gray & Davis electric lighting and engine starting system; demountable rims; tire carriers; license brackets; tool-jack; pump; tire repair kit; robe and foot rails.

Palmer-Singer—Palmer & Singer Mfg. Co., L. I. City, N. Y.

Models—Three models on each of two six-cylinder chassis, both having T-head motors, the smaller cylinders measuring 4 x 5 and the larger 4 x 5½ inches. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in floating rear axles. Wheelbases are 128 inches for the smaller, on 36 x 4½-inch tires, and 134 inches for the larger on 36 x 4½-inch tires.

Prices—Larger chassis: Roadster or five-passenger touring model, $2,495; six-passenger, $2,595. On smaller chassis: Roadster or five-passenger touring model, $2,000.

Changes from Previous Construction—Smaller model practically unchanged. In larger model: V-type radiator; streamline body; left drive with center control; wheelbase lengthened; equipment added.

Selling Features—Six-cylinder motors; exceptionally strong frame; bull's-eye side lamps flush with dash; demountable rims; shock absorbers on rear springs; gauges, etc., mounted flush with sub-dash; tire carrier at rear; clear running boards; gasolene tank at rear; multiple jet carburetter; disk clutch; selective-type gearset; extra large brakes; deep upholstery; extra long springs; quiet operation; choice of air or electric engine starter.

Equipment—Included in price with larger model: Stewart-Warner speedometer; eight-day keyless clock; shock absorbers on rear springs; rear tire carriers; clear-vision windshield; "one-man" top and boot; patented type storm curtains; one-ton jack; tire pump; tools, etc; electric horn; emergency electric light; electric starting and electric lighting. Smaller model: Demountable rims; lamps; rear tire irons; horn; tools; pump and jack.

Partin-Palmer—Partin Mfg. Co., Chicago, Ill.

Models—One model on one four-cylinder chassis having overhead valve cylinders; the motor is rated at 38 horsepower. Transmission elements include cone clutch, three-speed gearset and shaft drive to bevel gears in three-quarter floating rear axle. Wheelbase is 115 inches.

Price—Touring model, $975.

Changes from Previous Construction—The car is new throughout and is exhibited for the first time.

Selling Features—Block-cast overhead valve motor; three-point suspension; detachable cylinder head; left drive with center control.

Equipment—Top with boot and curtains; windshield; speedometer; Prest-O-Lite tank; gas head lamps; oil side and tail lamps; demountable rims with tire carriers; tools; tire repair kit; pump; jack; horn.

Pathfinder—Motor Car Mfg. Co., Indianapolis, Ind.

Models—Five models on one four- and two six-cylinder chassis. The "four" cylinders measure 4⅛ x 5¼ inches, as do those in the larger "six," the smaller "six" measuring 3¾ x 5¼ inches. Transmission elements include cone clutch and three-speed gearset in the "four," dry disk clutch and four-speed gearsets in both "sixes"; drive by shaft to bevel gears in floating rear axles. Wheelbases are 120 inches on 35 x 4½-inch tires for the "four"; 124 inches on 34 x 4½-inch tires for the smaller "six"; and 134 inches on 35 x 5-inch tires for the larger "six."

Prices—"Four": Roadster, $2,160; touring, $2,185; coach, $2,500. Smaller "six": Touring, $2,200. Larger "six": Touring, $2,750.

Changes from Previous Construction—Both six-cylinder models

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are new throughout and are exhibited for the first time. Detail refinements only in the "four."

Selling Features—Both four- and six-cylinder motors; low price; simplicity; elimination of weight; few bearings; comfort; distinctive body lines; V-shaped radiator; electric lighting and engine starting equipment.

Equipment—Top with boot and curtains; windshield; speedometer; Gray & Davis electric lighting and engine starting system; horn; jack; tools; tire repair kit; pump; robe and foot rails.

Peerless—Peerless Motor Car Co., Cleveland, O.

Models—Seven models on each of three six-cylinder chassis, motors having cylinders measuring 4 x 5½, 4½ x 6 and 5 x 7, respectively. Transmission elements the same in each and include internal expanding clutch, four-speed gearset and bevel gear drive. Wheelbases measure 125, 137 and 140 inches for the three models, tire sizes being 36 x 4½ front and rear, 36 x 4½ front and 37 x 5 rear, and 38 x 5½ front and rear, respectively.

Prices—"Six-38": Touring, torpedo and roadster, $4.300; coupe, $5,000; limousine, $5,300; landaulet, $5,400; Berline-limousine, $5,500. "Six-48": Touring and torpedo, $5,000; limousine, $6,000; landaulet, $6.100; Berline-limousine, $6.200. "Six-60": Touring and torpedo, $6,000; limousine, $7,000; lanlaulet, $7,100; Berline-limousine, $7,200.

Changes from Previous Construction—Center of gravity lowered; springs redesigned; pistons redesigned to carry but three rings; equipment increased; front compartment of bodies upholstered; muffler redesigned; upholstery made thicker in rear seats; universal joint put in transmission line instead of flexible coupling; new rain-vision windshield; Firestone demountable rims adopted; nickel instead of brass finish; window area of closed cars increased; new type auxiliary seats adopted; electric 'phone added to equipment; gasolene tank placed at rear of body; tire carriers at rear instead of on running board.

Selling Features—Six cylinders; complete electric system; powerful starter; Bosch dual ignition; pressure feed fuel system; throttle governor; dash priming device; patented radiator design; expanding band clutch; selective gearset with four speeds; full-floating arched and trussed rear axle; platform rear springs; new type auxiliary tonneau seats.

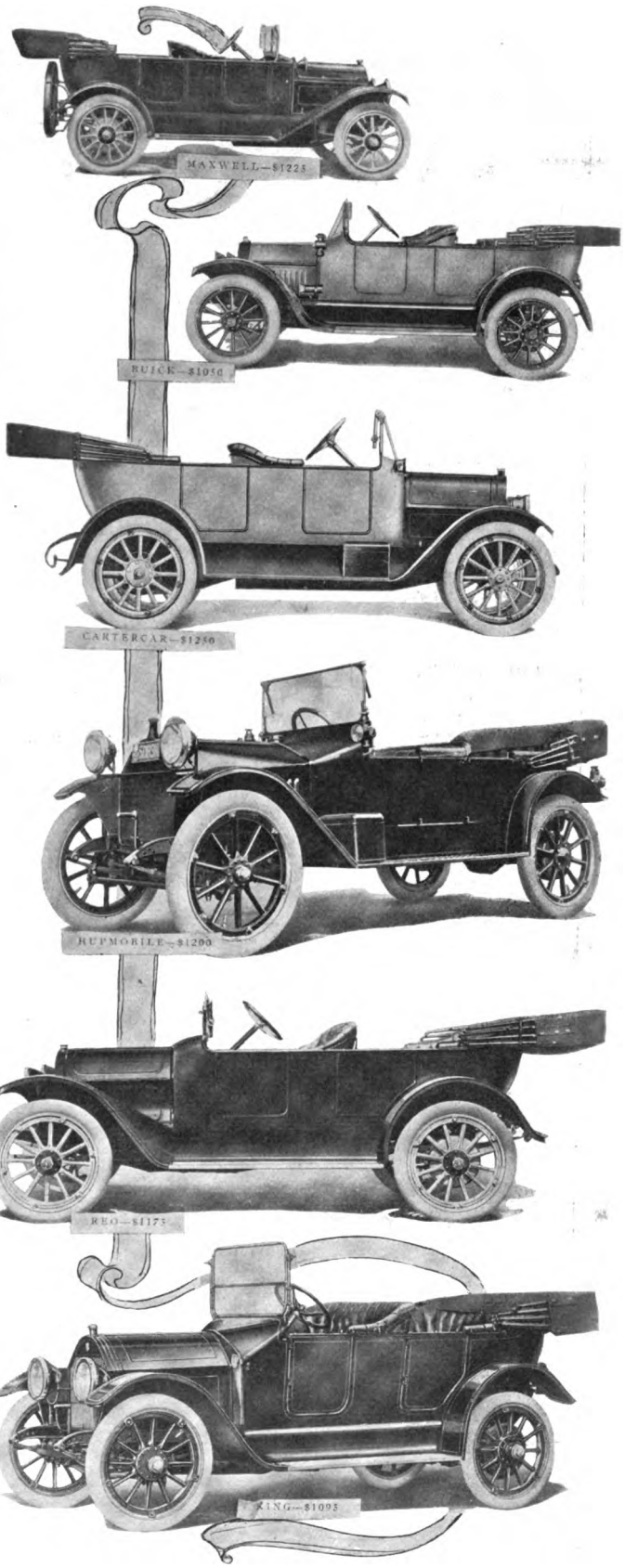
Equipment—Top with boot and side curtains; Gray & Davis electric lighting and engine starting equipment; combination Klaxon and bulb horn; Warner speedometer with clock; rain-vision windshield; Firestone demountable rims; Truffault-Hartford shock absorbers in front and Gabriel rebound snubbers in rear; four-cylinder power tire pump; robe and foot rails; inspection lamp; tools; tire repair kit; jack; tire irons. Enclosed cars have in addition: Chauphone; driver's mirror; toilet cases and flower vases.

Pierce-Arrow—Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Models—Twelve models on each of three six-cylinder chassis. Cylinders measure 4 x 5½ inches, 4½ x 5½ inches and 5 x 7 inches respectively. Transmission elements include cone clutches, four-speed gearsets and shaft drive to bevel gears in semi-floating rear axles. Wheelbases are 127½ to 132 inches for the smallest chassis, on 36 x 4½-inch tires; 134½ to 142 inches for the next larger chassis on 37 x 5-inch tires; and 140 to 147½ inches lor largest chassis on 37 x 5-inch front and 38 x 5½-inch rear tires.

Prices—Smallest chassis: Runabout, four- and five-passenger touring, $4,300; brougham and landaulet, $5,200; vestibule brougham and landaulet, $5,400. Next larger chassis: Runabout, four- and five-passenger touring $4,850; seven-passenger touring, $5,000; brougham and landaulet, $5,800; suburban and landau, $6,100; vestibule suburban and landau, $6,300; vestibule brougham and landaulet, $6,000. Largest chassis: Runabout, four- and five-passenger touring, $5,850; seven-passenger touring, $6,000; suburban and landau, $7,100; brougham and landaulet, $6,800; vestibule suburban and landau, $7,300; vestibule brougham and landaulet, $7,000.

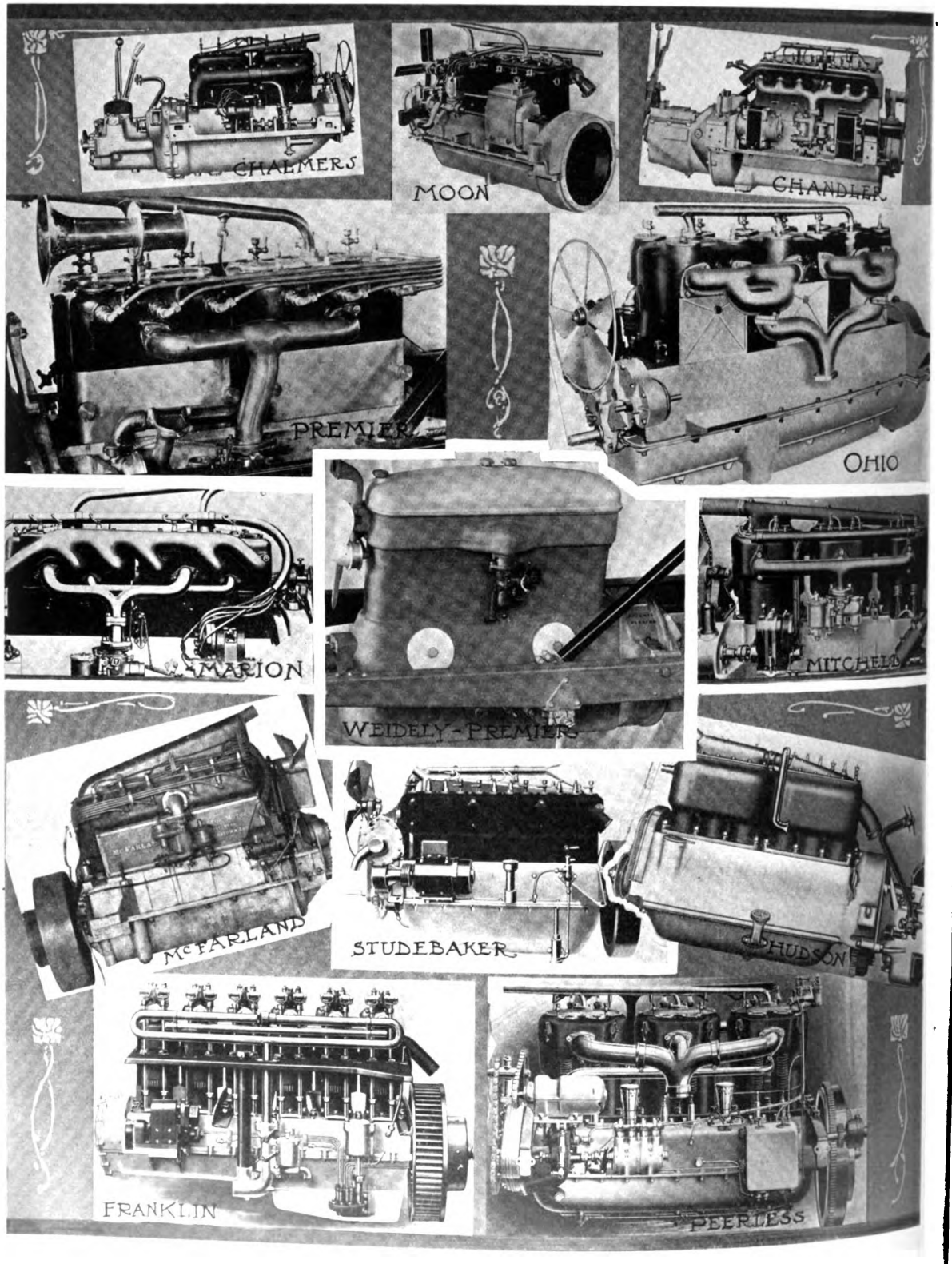
Changes from Previous Construction—Improved cone clutch; electric instead of air starter; gasolene tank gauge added; head-



"FOURS" FOR THE MAN WITH LESS THAN $1,251

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WELL-KNOWN ENGINES SHOWING DIVERSITY IN SIX-CYLINDER TYPES



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lamps placed on fenders; equipment includes Pierce-Arrow demountable rims.

Selling Features—Durability of chassis; high class of workmanship; cast aluminum body; complete equipment.

Euipment—Electric generator and starter; number illuminator; dash instrument and extension lamps; bulb and Klaxon horns; full set of tools; Warner speedometer and clock; coat and blanket rail; extra tire carrier with well in running board; folding foot rest in touring and enclosed; gasolene primer and gauge; power tire pump; collision bumper; two extra folding seats in seven-passenger cars; Yale locks, with universal key on hood; dash cabinets, tool compartments, oil and grease box and tire carrier.

Premier—Premier Motor Mfg. Co., Indianapolis, Ind.

Models—Seven models, three six-cylinder chassis. Two of the motors have T-head cylinders and measure 4½ x 5¼ inches and 4 x 5 inches, respectively. The third "six" has overhead valves and measures 3⅝ x 5½ inches. Transmission elements include disk clutches, three-speed gearsets and shaft drive to bevel gears in floating type rear axles. Wheelbases are 140 inches for the largest "six," on 36 x 4½-inch and 37 x 5-inch tires; 132 inches on 36 x 4½-inch tires for both the other chassis.

Prices—"Largest six": Touring, $3,750; De Luxe, $6,000; limousine, $5,500; roadster, $4,000; series X touring, $4,000. Smallest chassis: Touring and roadster, $2,735; limousine, $4,250; De Luxe, $5,000.

Changes from Previous Construction—The overhead valve motor is new throughout and is exhibited for the first time, its chassis being practically the same as that for the 4 x 5 T-head motor. Few alterations in older models.

Selling Features—Six-cylinder motors; new overhead valve motor; Turkish upholstery; honeycomb radiators; left-side steer with center control; pneumatic engine starter; electric lights; disk clutches.

Equipment—Series N cars have gas and oil lamps; Prest-O-Lite tank; demountable rims; shock absorbers; tire irons; jack; tools; robe and foot rails; pneumatic starter. Series X cars have in addition: Pantasote top with boot and curtains; windshield; speedometer; electric horn; electric lighting system. De Luxe cars have in addition: Interior furnishings complete; Burbank top with side curtains.

Pullman—Pullman Motor Car Co., York, Pa.

Models—Four models on two four- and two six-cylinder chassis. the "fours" having cylinders measuring 4 1/16 x 5 inches and 4⅜ x 5½ inches, and the "sixes" 4⅜ x 5½ and 3¾ x 5¼ inches, respectively. Transmission elements include cone clutches in the "fours" and the larger "six" with four-speed gearsets in all models but the smallest "four," which has three speeds; the smallest "six" has a disk clutch. Wheelbases are 118 inches on 34 x 4-inch tires for the smaller "four"; 122 inches on 36 x 4-inch tires for the larger "four"; 130 inches on 36 x 4½-inch tires for the smaller "six," and 138 inches on 37 x 5-inch tires for the larger "six."

Prices—Smaller "four," $1,775; larger "four," $1,975. Smaller "six," $2,400; larger "six," $2,850.

Changes from Previous Construction—The smaller "six" is new throughout and is exhibited for the first time. Few changes in the other models.

Selling Features—Vulcan electric gear shift on smaller "six" and the following: Four-speed gearset; Timken axles; gasolene tank in cowl; extra long rear springs; straight line drive; German silver radiator; left drive with center control; Turkish upholstery; complete equipment; streamline body.

Equipment—Top with boot and curtains; electric lighting and engine starting system; windshield; speedometer; electric horn; power tire pump; Vulcan electric gear shift on light "six" chassis; tools; tire repair kit; demountable rims; robe and foot rails.

Regal—Regal Motor Car Co., Detroit, Mich.

Models—Four models on two four-cylinder chassis, the smaller of which has cylinders measuring 3¾ x 4½ and the larger 4 x 5. Transmission elements include cone clutches, three-speed selective gearsets, and drive through shaft to bevel gears in floating type axles. Wheelbases are: Underslung roadster, coupe and touring car, 108 inches on 32 x 3½-inch tires for open cars and 33 x 4 for coupe; overslung touring car wheelbase is 116 inches on 34 x 4 tires.

Prices—Underslung roadster and touring model, $1,125; coupe, $1,600; overslung touring car, $1,350.

Changes from Previous Construction—Steering gear shifted to left side and control levers to center; electric lighting and engine starting equipment added; springs of overslung model hung below axle; cellular instead of tubular radiator; new clutch collar bearing.

Selling Features—Stability of underslung models; electric lighting and engine starting system; complete equipment; roomy bodies; left drive and center control; cowl dash with instrument board; special adjustable curtains; demountable rims; tire irons built in place.

Equipment—Top with boot and curtains; windshield; demountable rims with one extra, and tire carriers; Rushmore electric lighting and engine starting system; electric horn; robe and foot rails; tools; tire repair kit; jack; pump.

Reo—Reo Motor Car Co., Lansing, Mich.

Models—Two models on one four-cylinder chassis having cylinders measuring 4 x 4½ inches. Transmission elements include disk clutch, three-speed gearset and shaft drive to bevel gears in floating rear axle. Wheelbase is 112 inches on 34 x 4-inch tires.

Prices—Roadster and touring model, $1,175.

Changes from Previous Construction—New body styles; drive shaft universal joint improved; transmission roller bearings altered; equipment added.

Selling Features—Standardization; oversize tires; magneto ignition; doubly heated carburetter; liberal use of roller bearings; $220 lopped off price; streamline body; electric lighting and engine starting equipment added; new tire holder.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting system; electric horn; demountable rims with one extra and tire carriers; pump; jack; tools; tire repair kit.

Stearns-Knight—F. B. Stearns Co., Cleveland, O.

Models—Nine models on both four- and six-cylinder chassis equipped with Knight motor. The four-cylinder motor measures 4¼ x 5½, and the "six" 4¼ x 5¾. Transmission elements are the same in both and include dry multiple disk clutch, three-speed gearset in the "four" and four-speed in the "six," full-floating rear axles and final drive by bevel gears, though worm drive is optional at $100 extra. Wheelbases: "Four," 121 and 127 inches; "six," 134 and 140 inches. Tires measure 36 x 4½ in front for all four-cylinder models and 37 x 5 rear in seven-passenger touring and limousine models; "six" tires measure 37 x 5 both front and rear.

Prices—Four-cylinder: Four- and five-passenger touring, $3,750; seven-passenger, $3,900; coupe, $4,450; limousine, $5,100. "Six": Roadster and five-passenger touring, $4,850; six- and seven-passenger, $5,000; limousine, $6,100; landaulet, $6,200; Sedan, $6,100.

Changes from Previous Construction—Left drive with center control; steering column control of carburetter, ignition system, lights and Klaxon; streamline bodies with tapered hoods and cowl; wire wheels optional; tool boxes located under body over running boards; Pantasote substituted for silk mohair in top; gearset in four-cylinder model moved from rear axle to engine; new auxiliary seats in touring models.

Selling Features—Knight sleeve-valve motor; sturdy chassis construction; rear axle construction, solid forging split in center to carry differential mechanism; left drive with center control; attractive, well-finished bodies; steering column control; variety of bodies; complete equipment and convenience of appointments; distinctive body treatment; disappearing auxiliary seats; both brakes expanding type on rear wheels.

Equipment—Gray & Davis electric lighting and starting system; one-man top with boot and side curtains; speedometer;

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Klaxon horn; Q. D. demountable rims with two extra; robe and foot rails; tools; jack; pump; tire repair kit; body fittings.

Speedwell—Speedwell Motor Car Co., Dayton, O.

Models—Two models on one six-cylinder chassis equipped with Speedwell-Mead rotary valve motor having cylinders measuring 4⅛ x 5¼ inches. Transmission elements include disk clutch, selective gearset and shaft drive to floating rear axle. Wheelbase is 135 inches on 36 x 4½ and 37 x 5-inch tires.

Prices—Five-passenger, $2,850; seven-passenger, $2,950.

Changes from Previous Construction—Valves have been fluted; new manifolds adopted; motor greatly simplified. Few chassis changes.

Selling Features—Timken front and rear axles; Brown & Lipe transmission; Continental motor; Bosch dual ignition; Wagner starting and lighting system; Parish & Bingham frame; Sheldon springs; Fedders radiator; Spicer propeller shaft and Universal joints; Firestone demountable rims; Stromberg carburetter; Jacox steering gear; Turnbull wheels; Powell muffler; Warner speedometer.

Equipment—Electric starting and lighting system; glass front; dash ventilators; powerful electric horn; concealed tool box; lockers under cowl; license tag holders; Pantasote top; quick-detachable curtains, and top cover with Bair patent bow separator and holder, concealed top irons; carburetter choke switch on toe board; gear shift lever lock; folding foot rail; automatically adjusting robe rail; Warner speedometer; electric trouble lamp; Firestone demountable rims; extra rim; tire carriers; tire repair kit and engine driven tire pump; tool kit including jack; and oil can and holder on dash under hood.

Stevens-Duryea—Stevens-Duryea Co., Chicopee Falls, Mass.

Models—Ten models on one six-cylinder chassis having cylinders measuring 4 5/16 x 5½ inches. Transmission elements include dry disk clutch, three-speed gearset, and drive to bevel gears in full-floating rear axle. Wheelbases are 131 and 138 inches on either 37 x 4½ or 37 x 5-inch tires.

Prices—On 131-inch wheelbase chassis: Roadster or five-passenger touring car, $4,550; coupelet, $5,000 landau-phaeton, $5,200; demi-Berline, $5,750; limousine, $5,800. On 138-inch wheelbase chassis: Seven-passenger touring, $4,800; landau-phaeton, $5,400; limousine, $6,000; Berline, $6,200.

Changes from Previous Construction—Compressed air starting system; tonneau light in touring models; new style tail lamp; Westinghouse dynamo and lighting system.

Selling Features—Unit power plant; three-point support; dry disk clutch; underslung compensating rear springs; streamline bodies; adjustable rear seat; highly finished bodies; luxurious upholstery.

Equipment—Top with boot and side curtains; adjustable windshield; speedometer-clock; electric lighting system; electric horn; pneumatic engine starter; power tire pump; gasolene gauge and primer; demountable rims with extras; tire carriers; coat and foot rails; tools; tire repair kit; jack; bulb horn.

Studebaker—Studebaker Corp. of America, Detroit, Mich.

Models—Three models on six-cylinder chassis and two on four-cylinder chassis. Both motors have L-head cylinders measuring 3½ x 5 inches. Transmission elements include cone clutch, three-speed gearset and shaft drive to bevel gears in full-floating rear axles. Wheelbases are 108 inches for the "four" on 32 x 3½-inch tires, and 121 inches for the "six" on 34 x 4-inch tires.

Prices—"Six": Touring, $1,575; landau-roadster, $1,950; Sedan, $2,250. "Four": Touring, $1,050; landau-roadster, $1,200.

Changes from Previous Construction—Left drive with center control; gasolene tank in cowl; auxiliary seats fold in back of front seat; full-floating rear axles with Timken bearings; landau-roadster models added.

Selling Features—Low price considering quality and equipment; block motors; long stroke; quiet operation; left drive with center control; complete electrical equipment; elimination of magneto; cowl gasolene tank; rear axle gearset; full-floating rear axles; large tires; landau-roadster bodies; moulded fenders; wide doors; clean running boards; flexible springs; simplicity of power plant; accessibility.

Equipment—Top with boot and curtains; demountable rims with one extra; Stewart-Warner speedometer; Studebaker-Wagner electric lighting and engine starting system; Gray & Davis lamps; windshield; tire carriers; tools; pump; jack; tire repair kit; electric horn.

Stutz—Stutz Motor Car Co., Indianapolis, Ind.

Models—Two models on one each four- and six-cylinder chassis, the "four" having cylinders measuring 4¾ x 5½ inches and the "six" 4 x 5 inches. Transmission elements include cone clutch and Stutz rear system. Wheelbases are 120 and 130 inches for roadster and touring on both chassis, tires measuring 34 x 4½ inches.

Prices—"Four": Roadster, $2,000; six-passenger touring, $2,000. "Six": Roadster, $2,250; six-passenger touring, $2,400.

Changes from Previous Construction—Pan eliminated; electric starter added; cone instead of disk clutch: brake drums enlarged two inches.

Selling Features—Stutz rear system; strength of parts; four- and six-cylinder motors; Stutz electric starter.

Equipment—Electric starter and lights; tools; demountable rims; tire repair kit; pump: jack; horn.

Twombly—Twombly Car Corp., New York City.

Models—Three models on two chassis, one having two cylinders measuring 3¾ x 4 inches and the other having four cylinders measuring 2¾ x 3½ inches. Transmission elements include Twombly three-step friction mechanism with two-speed shaft giving six forward speeds and two reverse. Wheelbase is 96 inches on 28 x 2½-inch tires on wire wheels.

Prices—Two-cylinder model in two-passenger tandem, two-passenger side by side or single-passenger, $395. Same bodies on four-cylinder chassis will list for under $500. Exact price not yet determined.

Changes from Previous Construction—Cyclecar which is new throughout and is exhibited for the first time.

Selling Features—Light weight; narrow tread; piston valve motor in both models; 50 miles to the gallon of fuel; 50 miles per hour; mechanical starter; wire wheels; underslung construction.

Equipment—Two side lamps; tail lamp; horn and tools.

Winton—Winton Motor Car Co., Cleveland, O.

Models—Eight models on one six-cylinder chassis with L-head cylinders measuring 4½ x 5½ inches. Transmission elements include disk clutch, four-speed gearset with direct drive on third, and shaft drive to bevel gears in full-floating rear axle. Wheelbase is 130 inches on 36 x 4½-inch tires.

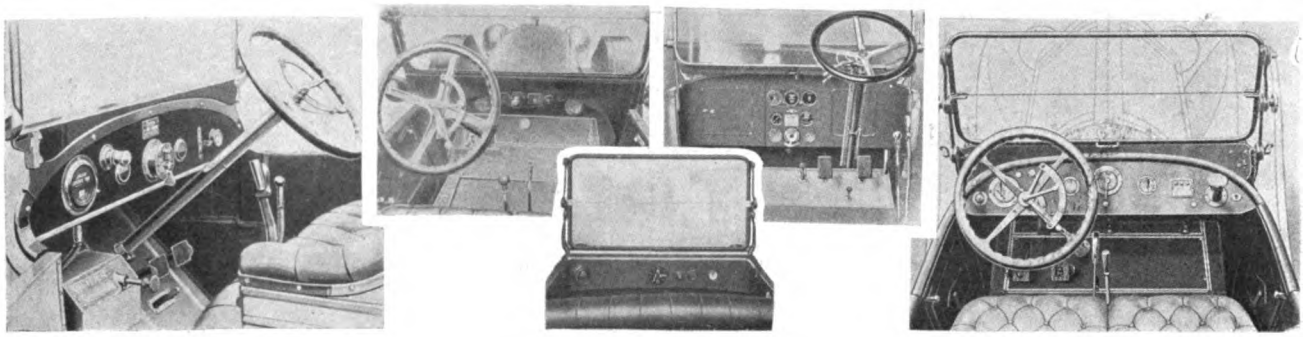
Prices—Runabout, four- and five-passenger touring, $3,250; six- and seven-passenger touring, $3,500; limousine, $4,350; double limousine, $4,600; landaulet, $4,600.

Changes from Previous Construction—Lowered suspension of motor and body; lengthened piston stroke; left drive, with 18-inch steering wheel and center control; clutch release increased; lengthened front springs; rear springs serve as radius rods; factor of safety in frame increased; tire inflation and increased starting pressure supplied by Kellogg pump; primer from cowl to intake, and hot tir tube to carburetter; cowl board carries speedometer, clock coil, etc; no side lamps; small auxiliary lamps in headlights serve instead; German silver radiator; metal parts finished in nickel.

Selling Features—Six-cylinder motor; air starter; electric lights; low suspension; left drive with center control; low upkeep cost; disk clutch; four-speed gearset with direct drive on third speed; proper balance; large tires; flexibility; smoothness of operation.

Equipment—Top with boot and curtains; windshield; speedometer; clock; electric lighting system; pneumatic starter; Kellogg air pump; Klaxon horn; demountable rims and tire carriers; tools; tire repair kit; jack; robe and foot rails.

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PUTTING THE CONTROLS UNDER THE DRIVER'S EYE—CONTRASTS IN COWLBOARDS AND DASHES

White—The White Co., Cleveland, O.

Models—Thirteen models on two four- and one six-cylinder chassis. The smaller "four" measures 3¾ x 5⅛ inches, the larger "four" 4¼ x 6⅜ inches, and the six 4¼ x 5¼ inches. Transmission elements include cone clutches, four-speed gearsets which give direct drive on third speed in the "fours" and in fourth for the "six," shaft drive to bevel gears in floating type rear axles. Wheelbases are 110 inches on 34 x 4-inch tires for the smaller "four"; 120 inches on 36 x 4½-inch tires for the larger "four," and 132 inches on 37 x 5-inch tires for the "six."

Prices—Smaller "four": Roadster and touring, $2,500; coupe, $3,250. Larger "four": Roadster and five-passenger touring, $3,300; seven-passenger touring, $3,500; coupe, $4,100; limousine, $5,000. "Six": Roadster, $4,800; five- and seven-passenger touring, $5,000; coupe, $5,400; Berline-limousine, $6,300.

Changes from Previous Construction—New bodies; larger "four" motor bore increased from 5¾ inches; three instead of two bearings in larger "four" motor.

Selling Features—Economy of long-stroke motor; cone clutches, four-speed gearsets; left drive with center control; electric lighting and engine starting system; compression release fitted.

Equipment—Electric lighting and engine starting system; Klaxon and bulb horn; power tire pump; robe and foot rails; demountable rime with one extra; tire carriers; license holders; tire repair outfit; jack.

Willys-Knight—Garford Co., Elyria, O.

Models—One model on one four-cylinder Knight-engined chassis having cylinders measuring 4 x 5½ inches. Transmission elements include four-speed gearset. Wheelbase is 120 inches.

Changes from Previous Construction—The car is virtually a new one and is exhibited for the first time.

Selling Features—Lanchester type rear springs; wire wheels; worm drive; Knight engine.

Equipment—Complete.

Marmon—Nordyke & Marmon Co., Indianapolis, Ind.

Models—Six models on six-cylinder chassis and eight on four-cylinder chassis; one model on "light six" chassis. Larger "six" and the "four" have T-head cylinders measuring 4½ x 6 and 4½ x 5, respectively; "light six" has L-head cylinders measuring 4¼ x 5½. Transmission elements include cone clutches in "four" and "light six" and dry plate in large "six," selective gearsets in all with shaft drive to bevel gears in Marmon floating rear axles. Wheelbases are 145 for the larger "six" on 36 x 4½ and 37 x 5 tires; 132 inches for the smaller "six" on 35 x 5 tires; and 120 inches for the "four" on 35 x 4½ tires.

Prices—Larger "six": Roadster or touring, $5,000; limousine, $6,250; Berline-limousine, $6,450. "Four": Roadster, $2,900; speedster, $2,850; touring, $3,000.

Changes from Previous Construction—Few changes in older models; "light six" is new throughout and is shown for the first time.

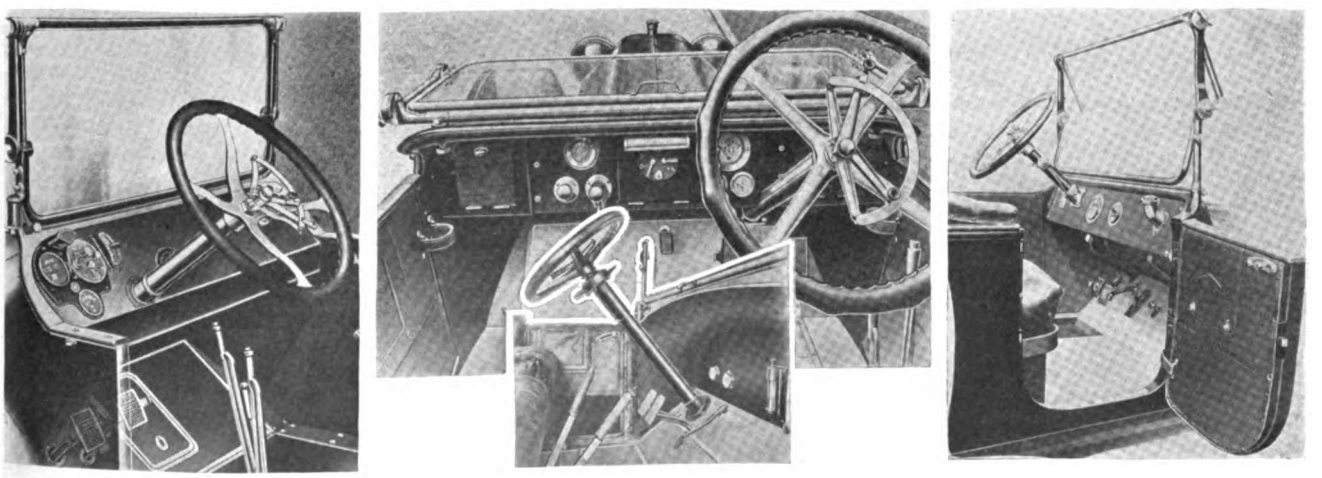
Selling Features—High-class construction; Marmon motor and distinctive Marmon force-feed oiling system; easy riding qualities; power; speed; durability; ease of operation; long springs; choice of models; three-point motor suspension; Marmon front axle.

Equipment—Electric starting and lighting system; top; speedometer and clock combination; electric light to illuminate entire dash; electric emergency lamp with long extension cord; electric horn with button on steering wheel; shock absorbers front and rear; tire carrier and one extra demountable rim; tools; oiler; jack; tire repair kit and pump. Larger "six" has in addition: Metal box on left side containing three suit cases.

Vaughan—Vaughan Car Co., Kingston, N. Y.

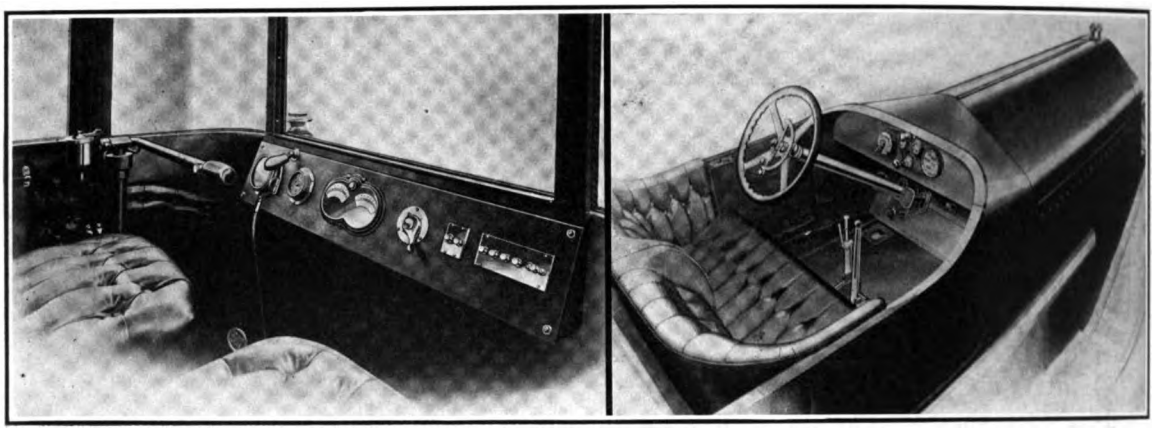
Models—Four models on one six-cylinder chassis having cylinders measuring 3¾ x 5½ inches. Transmission elements include dry disk clutch, four-speed gearset with direct on third, drive to bevel gears in full-floating rear axle. Wheelbase is 138 inches.

Price—Five-passenger touring model, $2,750.



MORE VARIETY, SHOWING THE TENDENCY TO CENTRALIZE DEVICES THAT FACILITATE OPERATION

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CONTRASTING "GAS" AND ELECTRIC COWLBOARDS—CENTURY ELECTRIC AND NATIONAL "SIX"

Changes from Previous Construction—Car is new throughout.

Selling Features—Block motor; low center of gravity; four-speed gearset with direct on third; dry disk clutch; Mea magneto; Bijur lighting and starting system; large brakes, both expanding; extreme accessibility of power plant and chassis details; full streamline body with narrow radiator and tapering hood; triple worm thread steering gear; left steering with center control; Lemoine floating cantilever rear springs; no shock absorbers; close fitting fenders.

Equipment—Top with boot and curtains; windshield; speedometer; electric lighting and engine starting system; horn; jack, tools, tire repair kit, pump.

Velie—Velie Motor Vehicle Co., Moline, Ill.

Models—Seven models on one six- and two four-cylinder chassis, the "fours" measuring 4⅝ x 5½ inches and 4 x 5½ inches, respectively, and the "six" 3¾ x 5¼ inches. Transmission elements include dry plate clutches, four-speed gearsets in the larger models and three in the smaller, shaft drive to bevel gears and floating rear axles. Wheelbases are 113 inches on 34 x 4-inch tires for the smaller "four"; 121 inches on 36 x 4-inch tires for the larger four"; and 126 inches on 37 x 4½-inch tires for the "six."

Prices—Smaller "four," $1,500; larger "four," $2,000; "six," $2,-50.

Changes from Previous Construction—Starter changed to front and drive; springs widened; larger "four" bore increased from 4½ inches.

Selling Features—Freedom from mechanical difficulties; ability; low upkeep cost; superior equipment; service.

Equipment—Mohair top; Collins side curtains; ventilating rain-vision windshield; speedometer; five demountable rims; coat rail; electric horn; complete set of tools; tool chest under front seat.

Voiturette—American Voiturette Co., Detroit, Mich.

Models—Three models on one four-cylinder motor having L-head cylinders measuring 3⅛ x 3¾ inches. Transmission elements include disk clutch, three-speed gearset, shaft drive to semi-floating rear axle. Wheelbase is 104 inches; tread 48 inches; tires measure 30 x 3 inches.

Changes from Previous Construction—This is a cyclecar and is new throughout.

Prices—Roadster, $495; roadster, tandem seats, $510; four-passenger touring car, $520.

Selling Features—Light weight; streamline bodies; wire wheels; center control; electric lights; V-type radiator; 104-inch wheelbase.

Equipment—Oil head and tail lamps, with tools.

Vulcan—Vulcan Mfg. Co., Painesville, O.

Models—Two models on one four-cylinder chassis with cylinders measuring 3⅜ x 5. Transmission elements include cone clutch, three-speed gearset and bevel gear drive to semi-floating rear axle. Wheelbase is 105 inches in roadster and 115 in touring car, tires measuring 32 x 3½ inches.

Prices—Roadster, $750; touring car, $850.

Changes from Previous Construction—One four-cylinder chassis, new throughout.

Selling Features—Unit power plant with cane-handle control to gearset; large bearings; combined force and splash oiling system; large cone clutch with spring inserts; three-speed selective gearing; semi-floating rear axle; five pinion differential; rack and pinion steering gear; whole of manufacturing operations carried on in Vulcan plant.

Equipment—Top with boot and side curtains; windshield; speedometer; gas head lamps with Prest-O-Lite tank; tools; compound tire pump; jack; tire repair kit.

Briscoe—Briscoe Freres, New York City.

Models—Two models on two four-cylinder chassis, the smaller model being a cyclecar. The motors measure 2¼ x 3¼ inches and 3 5/16 x 5¼ inches, respectively. Transmission elements include three-speed selective gearset with shaft drive to bevel gears in the larger model and friction transmission with final drive by chain in the cyclecar. The wheelbase is 105 inches on 30 x 3½-inch tires for the larger model; the cyclecar is fitted with 650mm. x 65mm. tires.

Prices—Larger touring model, $900; cyclecar, $390.

Changes from Previous Construction—Both cars are new throughout and are exhibited for the first time.

Equipment—Complete.

Mondex-Magic—Fischer Motor Corp., New York City.

Models—One six-cylinder model demonstrating the Fischer sliding valve motor.

Davis—George W. Davis Motor Co., Richmond, Ind.

Models—Four-cylinder gasolene automobiles.

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Convincing Proofs of Progress In Electric Cars

Dual Control Systems Will Be Conspicuous at Show—Worm Drive Gains Slowly; Worm Bevel Appears—Paul Poiret Designs Interiors and Luxury is Rampant—Magnetic Control Finding Favor

Luxury; more luxury; still more luxury. There isn't a better way of compressing into half a dozen words the impression conveyed by a quick, comprehensive review of the array of electric pleasure cars prepared for the great shows, bringing with them all the marks of all the skill that could be brought to bear in their construction. To be sure, it is nothing new for electrics to be luxurious; they always were top-notchers in that respect. But this time all previous efforts have been outdone and the electrics are more—well, more everything you can think of, than they ever were before. All right; smile if you like; you've heard the same expression, with variations, a good many times before. But it always has been true, and it is truer now than ever it was before.

Real Style in Interior Designs.

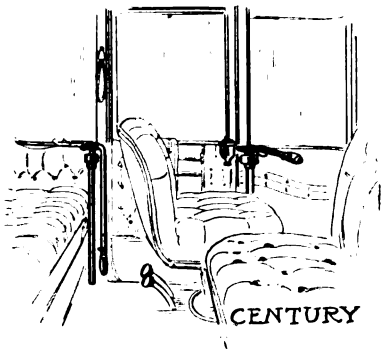
Don't imagine for a moment that these electric vehicle people stop short of the uttermost heights in their search for the ultimate in luxury, for they don't. Isn't it pretty near the limit when M. Paul Poiret —yes, yes; the minaret man himself—designs car interiors and decorations? Ask any one of the fair sex if it is possible to go further in search of the esthetic. The famous Frenchman has lent his skill to the finishing touches of the interiors of some of the Baker cars, and it's safe to say that when such a pace is set the standard of excellence is high all along the line.

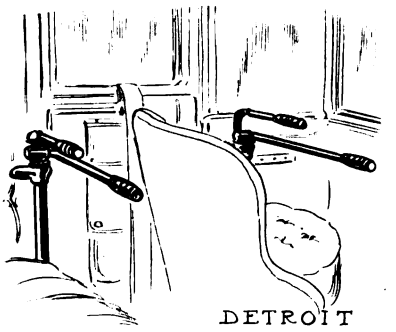
And just as much attention has been paid to the exteriors of the cars. It would need a thoroughgoing coach builder to appreciate the fine points of the bodies on these cars, just as it takes a true artist to perceive the beauty of a fine painting; but anyone can appreciatae that the latest bodies, though perhaps not radically changed, have been made more beautiful by far than ever before by the indefinable refining touches that are put on after the main features of design have been thoroughly worked out and found not wanting. For one thing, angles are becoming less conspicuous, and curves, which eliminate the division of the car into more or less well-defined blocks, are much—very much—in evidence. The rounded door-top of the Chicago, the curved drop sill of the Waverley and its rounded roof, are rather conspicuous examples of a tendency toward curves that is more or less general but is anything but obtrusive—in which lies one of its beauties. Speaking of roofs, by the way, one wouldn't imagine, to look at the Century roof, that there was anything remarkable about it, apart from the fact that it's distinctly a good-looking piece of work. It is out of the ordinary, however, for it is formed from a single piece of aluminum, and it is hard to imagine anything better in the way of a roof.

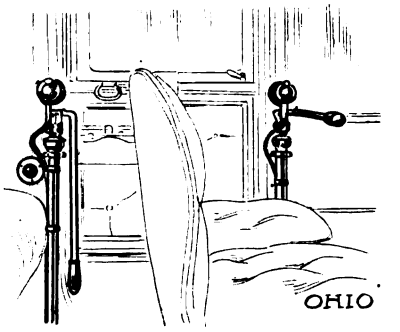
Douple Control in Many Models.

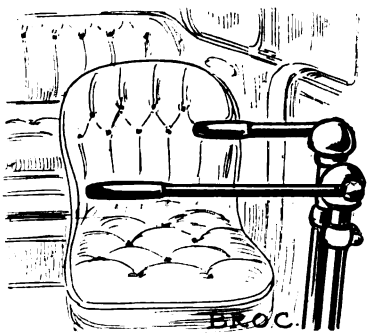
Luxury in an electric means more than looks, important though they be. Getting inside the car again, there is every evidence that nothing has been left undone to make the driver's task a regular sinecure. For instance, there is the double drive idea, which means that the car can be controlled from either front or rear seat, the levers being in duplicate. No less than nine cars—Broc, Baker, Borland, Century, Detroit, Ohio, Rauch & Lang, Woods and Waverley—are built in double-drive models in which the driver can steer from whichever seat his fancy—or more material considerations—may dictate. And almost ridiculously simple

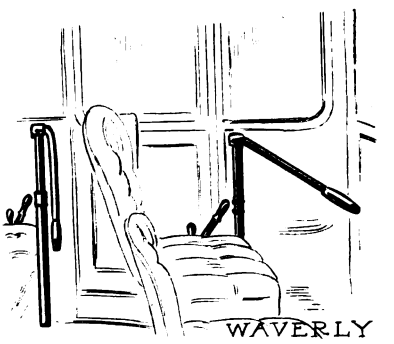
VARIETY IN ELECTRIC DUAL CONTROLS THAT FACILITATE OPERATION



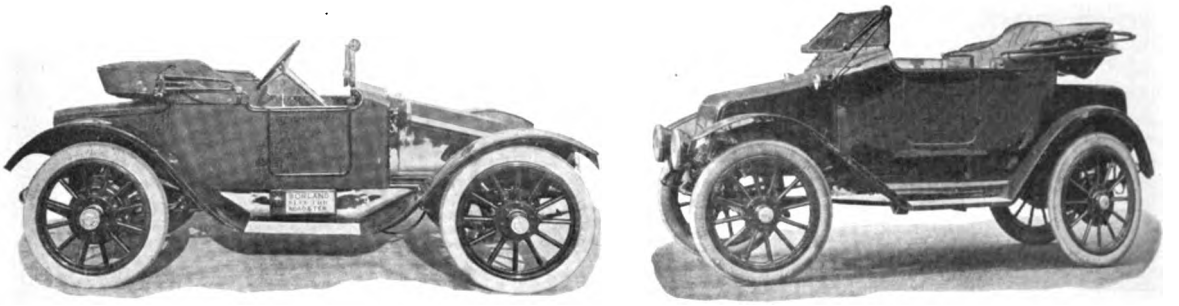








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TWO ELECTRIC RUNABOUTS WITH "GASOLENISH" LOOKS—BORLAND AND OHIO

though the operation of the ordinary type of controller is, there are at least two machines in which the power of electricity is invoked to make the speed changes, the driver's part being merely the turning of a sort of indicator that twists as easily as a door knob—oh, easier than that, even! In the case of the Ohio the magnetic controller—that is what it really is—is by no means new. The other car with this mechanical luxury is the Century. And on these same cars braking is reduced to the mere act of indicating what is needed—the willing current applies the brake.

Electric Cars With a Gasolene Look.

Of course chain drive—that is, the ordinary side or single roller chain drive—is a thing of the past in electrics, and the highest types of gears do their work with so little sound that one is sorely tempted to make use of that abused and overworked word "silent." Worm drives are in evidence, though none of the exhibiting makers use the worm exclusively; Woods, Detroit, Baker and Rauch & Lang build both worm and bevel gear driven models. Waverley and Argo are staunch adherents of the herringbone gear system, and it must be admitted that they have the very best of reasons. Different from all the others, while partaking of some of their features, is the Borland-Grannis final drive, which is through worm bevels—gears that look exactly as if they had been twisted in the making so that their teeth are parts of spirals instead of lying in straight lines. And, being half bevel and half worm, the drive is credited with possessing the best points of both. The bevel gear final drive of the Standard, with its spur gear reduction in the same rear axle housing, is a standard feature in that car in more than name.

One brand new car rises above the horizon, just in time for the show—the Ward coupe. Only one model is built as yet—a four-passenger car with a wheelbase of 96 inches and a whole-souled battery equipment that spells mileage capacity and vitality. All the passengers face forward—which, incidentally, has come to be a common arrangement and one that needs no arguments to prove its advantages.

While the "gasolenish" tendency has not spread to any great extent, it has been carried further than ever before in the latest Baker runabout and in the runabout and the limousine of the Borland-Grannis make. In fact, it is hard to suggest how the likeness could be carried much further, especially in the Borlands—for the omission of the crank doesn't mean anything in these days of self-starting engines. And the Century people have adopted a gasolene car feature in a way that does them credit. At the front there is a regular instrument board under the window, and on it are ranged the speedometer, clock, volt-ammeter, main switch and its lock and the buttons for the various electric lights. There is obvious merit in assembling these things within easy reach of hand and eye.

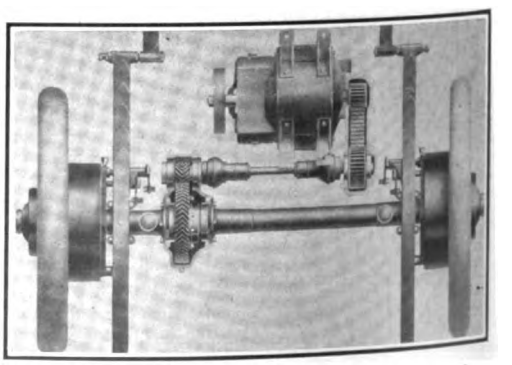
The springs of the electrics of the near past have left little room for improvement and most of the makers have stuck to what they have found good; the Waverly system, with its four full elliptic springs and their peculiar arrangement remains unchanged. The Rauch & Lang cars, however, show evidence of the exercise of engineering skill in the evolution of a spring system that includes rear springs of the so-called seven-eighths-elliptic type. The lower member is extraordinarily long, extending forward further than it extends back, and the peculiar system of hanging is such as to give the flexible leaves fully play.

Topping Off the Equipment List.

The electric, always eminently a lady's vehicle, has become more distinctly so than ever, at the same time, however, taking on such masculine attributes, so to speak, as increased strength, endurance and speed—the last two features owing much to recent advances in battery and motor construction. The complete, not to say lavish, equipment that is the rule is designed, clearly, to meet the requirements of the ladies, excepting, of course, the mechanical section. And, yes; there undoubtedly should be a question mark after that smoking set—or should there? Anyway, smoking sets loom rather large this year and, really, it's nobody's business who uses them.



RAUCH & LANG OVERHUNG WORM DRIVE



WAVERLEY HERRINGBONE GEAR DRIVING SYSTEM

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Resume of the Electrics and Their Characteristics

Argo—Argo Electric Vehicle Co., Saginaw, Mich.

Models—Three models on two wheelbase lengths; four-passenger roadster and four-passenger brougham on 108½-inch wheelbase, both having 38 x 4 cushion tires or pneumatics and 40 cells, 11 plate battery equipment; and five-passenger front drive brougham on 110-inch wheelbase with 38 x 4 cushion or pneumatic tires and 40 cell, 11 plate battery. All have herringbone gear drive.

Prices—Roadster, $2,500; four-passenger brougham, $2,800; five-passenger brougham, $3,100.

Changes from Previous Construction—Minor changes only. Body lines slightly changed to improve appearance; trimmings, accessories and fixtures improved; new type of steering gear; foot control details improved.

Selling Features—Extra long wheelbase; distinctive body with Renault type hood in front; all metal parts sterling silver plated; interlocking foot control system; swivel spring seats; irreversible wheel steer.

Equipment—Roadster: head, dash and tail lamps, ampere-hour meter, hub odometer, electric horn, tire chains, bumper, top, side curtains, windshield, tools, hydrometer, charging plug, jack, and tire outfit. On enclosed models all the foregoing except top, and in addition toilet case, smoking set, flower vase, arm loops, eight-day clock, rear vision mirror and cravenette slip covers to match upholstering.

Baker—Baker Motor Vehicle Co., Cleveland, O.

Models—Seven models, one a roadster and all others enclosed. Double-drive brougham, front drive brougham with lever steer and front drive brougham with wheel steer, on 92-inch wheelbase; front drive coupe with wheel steer, and rear drive coupe with lever steer, on 88-inch wheelbase; roadster with either lever or wheel steer on 88-inch wheelbase.

Prices—Double drive brougham, $3,250; front drive brougham, lever steer, $3,150; front drive brougham, wheel steer, $3,000; rear drive brougham, lever steer, $3,000; front drive coupe, wheel steer, $2,850; rear drive coupe, lever steer, $2,800; roadster, wheel or lever steer, $2,300.

Changes from Previous Construction—Worm drive with imported Lanchester-Daimler worm and gear; new roadster model.

Selling Features—Exceptitonally light weight and easy running, with long-distance capacity; worm drive instead of bevel for brougham when desired; forward or rear drive; fine upholstery and trimmings; roomy bodies; quiet and smooth running.

Equipment—On roadster: Weston volt ammeter and shaft odometer; full kit of tools; clear-vision windshield; tuto horn; side curtains. On enclosed models: One dome lamp, which lights automatically when the door is opened; two inside rear corner lamps; two ornamental side lamps; two head lamps; tail lamp; silver mounted cut glass flower vase; complete toilet case; combination lighting switch, giving operator complete control of all lights from seat; complete outfit of tools.

Borland—Borland-Grannis Co., Chicago, Ill.

Models—Five models: Five-passenger coupe, front or rear drive, 96-inch wheelbase, 34 x 4 pneumatic or cushion tires; 40-cell battery; gasolene type limousine; five-passenger Colonial type coupe on 93-inch wheelbase; five-passenger brougham, rear drive, 40-cell battery; and two-passenger gasolene type roadster with wheel steer, hand power control and foot accelerator increasing each speed 10 per cent., and 42-cell 11-plate battery.

Prices—Coupe, $2,900; limousine, $5,500; Colonial coupe, $2,700; brougham, $2,500; roadster, $2,550.

Changes from Previous Construction—Borland worm bevel gear drive; improved lubrication means; folding revolving front seats in forward drive coupe.

Selling Features—New worm bevel drive, smooth and quiet; both worm bevel and standard bevel gear drive systems; fine balancing of machines and proper distribution of weight; low current consumption and high mileage; safe and effective braking and controlling system; large braking surfaces.

Equipment—Complete.

Broc—Broc Electric Vehicle Co., Cleveland, O.

Models—Eight models on two chassis, which are practically alike except for wheelbase lengths, one measuring 96 inches and the other 98 inches. In all models battery is 40 cells, 11 plates; tires are 34 x 4 pneumatic or 36 x 4 cushion.

Prices—Range from $3,900 to $3,200.

Changes from Previous Construction—Double control steering lever and controller handle lock in idle position when lowered, preventing interference; only one key required to lock doors, controller and steering mechanism; idle brakes are impossible of control except by driver, and idle brake pedal is not in the way of car occupants; foot brake cut-out shutting off power when brake is applied; a cut-out that protects controller from burning even with unskillful driving, as it is not possible to drive with controller contacts between speeds; corner lights that are operated by opening of door; all lamps under independent control; wider bodies, making all models large enough for three persons on rear seat.

Selling Features—Bodies of unusually graceful design; ample head- and knee-room; sliding tool box under rear seat accessible without taking up cushion; all improvements considered excellent selling points.

Equipment—Carpet and rubber mat; Klaxet or electric bell; two side-lights; two corner lights; tail light; meter light; odometer; volt and ammeter; cylinder door-locks; cut glass flower vase; toilet case with mirror; eight-day clock; pump; tire repair outfits; charging plug and tools.

Century—Century Electric Car Co., Detroit, Mich.

Models—Two models; a four-passenger brougham on 96-inch wheelbase with notch-tread tires 36 x 4 inches, battery 30 cells, shaft drive; and five-passenger duplex-control brougham on 104-inch wheelbase with 36 x 4½-inch notch-tread tires; battery 42 cells.

Prices—Four-passenger brougham, $2,650. Five-passenger duplex control brougham, $3,250.

Changes from Previous Construction—Practically no changes; only refinements in details.

Selling Points—Underslung chassis; duplex control in larger model; handsome appearance and easy riding qualities; long distance on battery charge; oiling required only at long intervals; improved controller; dynamic brake.

Equipment—Complete.

Chicago—Chicago Electric Motor Car Co., Chicago, Ill.

Models—Three models; two four-passenger coupes on 96-inch wheelbase, tires 36 x 4 inches, battery 40 cells; and one five-passenger limousine on 104-inch wheelbase, tires 36 x 4 inches, battery 40 cells. All bevel gear drive and lever steer. Limousine has forward drive; the coupes rear drive. The coupe models have an extra emergency seat for a fifth passenger.

Prices—Limousine, $2,800. Coupes, each $2,500.

Changes from Previous Construction—Practically no changes have been made.

Selling Points—Popular prices, which have been considerably reduced owing to the company's expansion; long wheelbase and easy riding; ample battery equipment; smooth, quiet running, bevel gear drive; easy springs; accessible battery of high capacity type; low speed motor; arched doors.

Equipment—Complete.

Detroit—Anderson Electric Car Co., Detroit, Mich.

Models—Six models on chassis differing only in wheelbase length and minor details. Four-passenger brougham on 94-inch wheelbase; tires 34 x 4 pneumatic or 36 x 4 cushion; battery, 40 cells, 11 plates; bevel gear drive; Victoria on 85-inch wheelbase;

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tires 34 x 4 pneumatic or 36 x 4 cushion; battery 40 cells, 11 plates; bevel gear drive. Forward drive five-passenger brougham on 98-inch wheelbase; tires 34 x 4 pneumatic or 36 x 4 cushion; battery, 40 cells, 13 plates; bevel gear drive. Two-passenger roadster on 100-inch wheelbase; tires 34 x 4½ pneumatic or 36 x 4½ cushion; battery, 40 cells, 13 plates; worm drive. Four-passenger brougham on 100-inch wheelbase; tires 34 x 4½ pneumatic or 36 x 4½ cushion; battery, 40 cells, 13 plates; worm drive. Duplex drive five-passenger brougham on 100-inch wheelbase; tires 34 x 4½ pneumatic or 36 x 4½ cushion; battery, 40 cells, 13 plates.

Prices—Four-passenger brougham, bevel gear drive, $2,550, Victoria, bevel gear drive, $2,300; forward drive five-passenger brougham, bevel gear drive, $2,800; roadster, worm drive, $2,500; four-passenger brougham, worm drive, $2,850; duplex drive five-passenger brougham, worm drive, $3,000.

Changes from Previous Construction—Worm gear axle, with imported worm and gear; longer wheelbase; shorter turning radius, greater battery capacity; electric hand brake; roomier interiors; duplex drive system, enabling car to be driven from front or rear seat; double brake system; more luxurious fittings.

Selling Features—Worm gear axle; duplex drive; electric hand brake; long wheelbase; roomy interiors; moderate price.

Equipment—On Victoria: Head, side, tail and inspection lamps; speedometer; complete set of tools. On roadster, the same, with the addition of interior lights, flower vase, toilet case, rain vision window and, in duplex-drive brougham, sunburst dome light and smoking set.

Ohio—Ohio Electric Car Co., Toledo, O.

Models—Six models on a single chassis, which, however, is made in wheelbase lengths to suit body. All models enclosed. Two five-passenger cars on 98-inch wheelbase with 34 x 4½ pneumatic or 36 x 4 cushion tires; one four-passenger brougham on 98-inch wheelbase, same tire equipment; one four-passenger car on 85-inch wheelbase with 34 x 4 tires, either pneumatic or cushion; and two 5-passenger double drive cars on 98-inch wheelbase with 34 x 4½ pneumatic or 36 x 4½ cushion or solid tires. Standard battery, 40 cells, 13 plates.

Prices—Five-passenger double-drive models, $2,900 and $3,200; five-passenger single-drive models, $3,200 and $3,500; four-passenger brougham on 98-inch wheelbase, $2,900; four-passenger car on 85-inch wheelbase, $2,700.

Changes from Previous Construction—Sashless windows; one-piece front window that can be lowered to any desired point; rain vision windshield adjustable from inside; electric heater in metal pedestal supporting right front seat. The short wheelbase car is a new model.

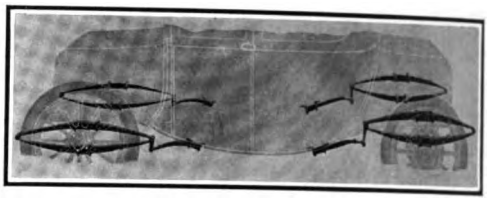
Selling Features—Double drive; magnetic control operated by hand-disk; magnetic brake; shaft drive without universal joint; motor suspended on end of torsion tube which hangs on ball-and-socket joint in center of car; handsome body lines in all models; double external brakes that will not freeze.

Equipment—Electric heater; side, tail and head lights; reading and meter lights; morocco bound toilet case; morocco bound smoking set; eight-day clock; flower vase, silk roller curtains, anti-rattlers on all windows; mirrorscope; speedometer-odometer; tools; tire repair outfit and charging plug.

Rauch & Lang—Rauch & Lang Carriage Co., Cleveland, O.

Models—Six models on three chassis. Roadster and club roadster (enclosed) on 92-inch wheelbase, bevel gear drive, tires 32 x 4 pneumatic or cushion, battery 40 cells 11 plates. Demi-brougham, on 86-inch wheelbase, bevel gear drive; tires, 32 x 4 pneumatic or 34 x 4 cushion; battery, 40 cells, 9 plates. Town car, 105-inch wheelbase, bevel gear drive, 33 x 4½ pneumatic or 36 x 4 cushion. Brougham on 92-inch wheelbase, worm drive, 33 x 4½ pneumatic tires or 36 x 4 cushion; battery, 41 cells, 11 plates. Coach on 96-inch wheelbase, worm drive, tires 33 x 4½ pneumatic or 36 x 4 cushion; battery, 42 cells, 11 plates.

Prices—Roadster, $2,600; club roadster and demi-brougham, $2,800; town car, $3,800; brougham, $2,950; coach, $3,100, with single control, and $3,200 with double control.



WAVERLEY ELECTRIC SPRING SUSPENSION

Changes from Previous Construction—Worm drive in brougham and coach with overhung worm; double control mechanism; seven-eighths elliptic rear springs on worm driven models.

Selling Features—Worm drive system; dual control mechanism, direct drive; improved rear spring system.

Equipment—On roadster: Head, side and tail lights; windshield, odometer; clock; tools. Brougham and town car: Same, with the addition of dome and corner lights; mirror and memorandum book in case; speaking tube and flower vase. Brougham and coach All items enumerated, and auxiliary rain-vision windshield.

Standard—Standard Electric Car Co., Jackson, Mich.

Models—One body—coupe—on one chassis with Westinghouse motor; battery 30 cells, 11 plates. Wheelbase 96 inches and tires 32 x 3½ front and 33 x 4 rear pneumatic, or 34 x 3½ cushion all around.

Price—$1,990.

Changes from Previous Construction—Longer springs, larger bearings in axles; improved brakes and refinements in coach work

Selling Points—Popular price; unit construction system, straight line drive without universal joints; double reduction drive with gear system built into rear axle; light weight, high efficiency motor; ample battery equipment; non-vibrating steering mechanism; very flexible springs and easy riding; excellent finish throughout.

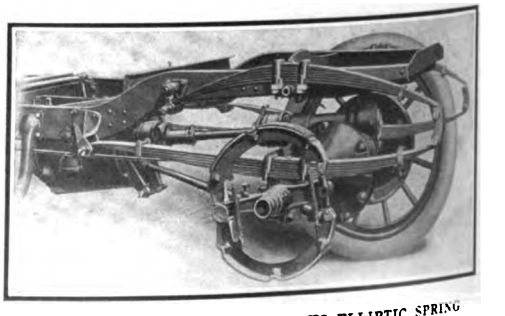
Equipment—Two front lamps; tail lamp; toilet case; flower vase; burglar-proof locks; jack; complete set of tools.

Waverley—The Waverley Co., Indianapolis, Ind.

Models—Thirteen models on what is practically a single chassis, differing in wheelbase length from 89 inches to 109 inches, and with details made to suit bodies, with Waverley noiseless drive system with shaft parallel with axle and herringbone gears. Battery equipment from 32 cells, 11 plates, to 42 cells. 13 plates, according to body.

Prices—Front drive "four," $3,000; rear drive "four," $2,800; double drive brougham, $3,000; limousine "five," $3,500 with 109-inch wheelbase and $3,150 with 106-inch wheelbase; four-chair brougham, $3,150; Georgian brougham, $3,250; Empire brougham, $2,800; Colonial brougham, $2,625; two-passenger coupe, $2,150; Victoria phaeton, $1,850; sheltered roadster, $2,250.

Changes from Previous Construction—Except for body refinements and the addition of five new models—which are new chiefly in the matter of body arrangement and include the front and rear drive "fours," the double-drive brougham, the four-chair brougham and a five-passenger limousine—there are practically no changes.



RAUCH & LANG SEVEN-EIGHTHS ELLIPTIC SPRING

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Selling Features—Exceptionally wide range for choice; forward, middle double drive; comfortable arrangement of chairs and seats; efficient and quiet driving system; low cost of maintenance; high-efficiency motor; non-arcing controller; excellent weight distribution; accessibility; simplicity.

Euipment—Lamps; charging plug; meters; flower vases in enclosed models; toilet articles; tools.

Ward—Ward Motor Vehicle Co., New York.

Models—One model, a four-passenger coupe on a 96-inch wheelbase; tires, Ward cushion, 33 x 2½; battery, 42 cells, 11 plates.

Price—$2,100.

Changes from Previous Construction—New model throughout. Exhibited for the first time.

Selling Features—Moderate price; ample battery and mileage of from 60 to 100 miles per charge; passengers all facing forward; optional painting and upholstery.

Equipment—Head, side and tail lamps; toilet case with watch; flower vase; speedometer; ampere-hour meter; set of tools and jack.

Woods—Woods Motor Vehicle Co., Chicago, Ill.

Models—Full information not available. Several large cars are built on 106-inch wheelbase chassis in addition to three smaller machines; all enclosed models with lever steer. Both front and rear seat control is employed, as well as dual control. Final drive by worm in some models and bevel gears in others. Frames of inverted U-shaped steel. Dual tread cushion tires. Motor and batteries hung from sub-frame; motor supported on ball-and-socket joint. Battery 40 cells, 13 plates, 16 cells in front and 24 cells in the rear, every cell accessible when hoods are raised.

Prices—Three smaller models, from $3,100 to $3,600. Other prices not available.

Selling Features—Ample battery capacity; choice of worm or bevel drive, front, rear or dual control; dual tread tires; accessible battery; exceptionally good battery and motor suspension; roomy bodies with wide seats.

Pointing the Way to the Many Accessories

Exhibits Will Contain Many New Things—Motors Somewhat Standardized But Lighting and Starting Systems Vary Widely—On-Coming of Hand Operated Horns and Auxiliary Spring Shock Absorbers.

Accessories! Never was there a more shamefully overworked word. Ever stop for a moment to think just what "accessories" stands for? Well, it stands for everything that is in an automobile, on an automobile and of an automobile—that's all. Everything that has anything to do with an automobile is an accessory, when it is by itself, whether it is a six-cylinder motor with a four-speed gearset built onto it, or a patent polishing rag to shine up the nickel-plated trimmings. Yes, and even the portable garages are shoved under the umbrageous branches of the wide-spreading word, to say nothing of clothes, and insurance policies and medicine bottles—the flat kind with the leather cover—and a thousand other things that line the aisles of the space devoted to accessories. And it is doubtful if there is a more educational phase of an automobile show than the accessories section, for there the hidden things are brought to light, and many an owner who never would know what was inside his car otherwise finds out by wandering through the mazes of exhibits and examining the marvels of mechanical anatomy that are spread before his eyes.

The lordly and more or less ponderous motor has just as important a place in the accessories section as it has in the car and, be it said, its importance as a part of an automobile show has increased along with the importance and the excellence of the car that is made up of parts manufactured by specialists and built by engineers who are experts in figuring out what parts make the best combinations. It is an undeniable fact that this method of building cars has greatly stimulated the manufacture of motors—to say nothing of other parts—and the supply has met the demand at least half way in every respect. As for things that are out of the ordinary, they are not lacking, though—Heaven be praised!—the days when "something out of the ordinary" meant a freakish curiosity have gone into the discard—for good.

Blocks, "Sixes" and Smaller Bores.

While the Magic motor with its crescent sliding valves really is a motor exhibit, the fact that it is shown in a car with other cars rather takes it out of the accesories category. Still there is the latest thing the Model Engine people have brought out—the Carter, a slide-valve motor in which the functions of the usual cylinder head and the valves are performed by what amounts to a second piston in the top of the cylinder, reciprocated by an extremely heavy camshaft, which is as strong as it is for the simple reason that it takes the thrust of the explosions. The valve-pistons are arranged to move in the direction of least resistance—that is to say, when the thrust is upward the valve-piston is moving up, and vice versa. The makers say that in a six-cylinder motor the camshaft moves without absorbing any appreciable amount of power from the "silent" driving chain, which serves mostly as a speed regulator or timer.

The light six-cylinder motor is much in evidence, just as are the light "six" cars; and practically all the better known makers are offering them. And it goes without saying, almost, that block casting for both four- and six-cylinder models is in high favor, the majority of the motors shown being of the block-cast type. Continental, Rutenber, Buda, Model—all have fine examples of block casting and light six-cylinder models. It cannot be said that there have been any startling changes in construction since the last big shows. Rather, there is a continuation of the policy of making good things better that results in finer finish, more accurate workmanship, better accommodation for various ignition and lighting and starting systems and so on. With the tendency in cylinder bores leaning toward smaller measurements has come a slight increase in speed and a corresponding increase in power without additional weight. In short, each pound of iron is made to produce more work than a pound of iron was asked to produce last year. As for unit power plants, suffice it to say that it is possible to obtain almost any combination of motor and gearset, or any motor separately. Of course, the center control feature is conspicuous—or, rather, it is almost alone in unit power plants.

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There has come to be a good deal of agreement among the makers of motors as to what is and what isn't right, and therefore there are not many radical differences between the engines of one maker and those of the others—with a few notable exceptions, of course. But when it comes to that comparatively new group of apparatus—the electric lighting and starting systems—it is another story altogether. While there are a few points upon which there is some unanimity of opinion, there are more upon which there is none. The single-unit systems in which one machine answers for both motor and dynamo, are holding their own, and so are the double units, which separate motor and generator. Voltages run all the way from 6 to 24, despite the obviously vital importance of the proper potential, and so far it is a question as to what voltage is making the best showing in service.

Wherein Starter-Lighters Have Changed.

The high-speed Hartford starting motor, with its energy-accumulating flywheel, is changed only in matters of detail. Rushmore is decreasing size and weight, having built a little on the safe side, so to speak—in fact, there is a general inclination to bring down weights somewhat, it having been found quite practicable to do so without interfering in the least with performance. The Vesta magneto generator has been lightened and more thoroughly protected. The Ward Leonard system appears with only detail improvements and refinements that increase its efficiency and reliability.

There is one tendency that is rather marked, and may be said to be quite logical, and that is the employment of the current generated by the lighting dynamo for ignition purposes, with the storage battery as a reserve for starting; the elimination of the magneto is the natural result of such an arrangement. The Delco, Autolite and Westinghouse are excellent examples of dynamos adapted to do ignition duty by the use of a quick breaking device, high-tension distributer of the magneto type and non-vibrator dashboard coil. Another example of rather unusual unanimity is found in the fact that the North East, Westinghouse and Autolite systems, where they drive through the flywheel by a shifting pinion, incorporate the starting switch and gearshifting mechanism in the motor unit, though the details of the arrangements differ considerably. The North East was a pioneer in the use of an automatically shifting pinion. The Rushmore starting motor is unique in the matter of gearshifting, for it shifts its pinion without the addition of any apparatus whatever, the shaft being allowed longitudinal play and the magnetic pull on the armature bringing the pinion into mesh with the flywheel gear against a spring; of course, as soon as the current is shut off and the magnetic pull ceases, the spring does its work and draws the pinion back into its idle position.

Ignition Starter Now Past History.

A new thing in the Gray & Davis line is a lighting and starting outfit that is of the two-unit type, but has the motor and generator superposed—double-decked, so to speak. The characteristics of the machines are those of the other Gray & Davis products, which is "'nuff sed." They also are making two sizes of starting motors instead of only one—that is, in the separate motor designs. A new lighting system that has yet to be "uncovered" will be exhibited by the Splitdorf people.

The ignition starter, while not an unqualified success as a motor starter, must be given credit for starting something else—to wit, the desire for an honest-to-goodness substitute for the hand crank. Having served its purpose, it has painlessly passed on. But before the ignition starter was launched on its "short, sharp and decisive" career there flourished, more or less, another cranker that was independent of human muscle—the air starter. And still it is doing its work, remaining on the job with a persistence that must have something substantial behind it in the way of merit.

Pneumatic Devices Which Find Favor.

The Thurber starter has been greatly improved and now appears as a unit—two-cylinder compressor and rotary air motor—adapted to be mounted at the front of the car and connected to the end of the engine shaft. Thus the former necessity for arranging a separate chain or gear drive for the compressor is eliminated and the system lightened and made more efficient. The Kellogg outfft, which has long been a standard apparatus, has been brought nearer to perfection by detail improvements, including a new all-metal air pump, and a six-cylinder compressor finds its place in big installations. Of more recent origin, and deriving not a little glory from its association with the Gray pneumatic gearshifting system, is the Gray pneumatic starter, which works as one department of the mechanism that controls both gears and motor; the starting motor, which is of the reciprocating type, is not incorporated with the gearshifter, but is located at the front of the engine.

There will be at the show a good deal that is of more than passing interest in the lamp line. There are at least two radical departures from ordinary materials in lamp construction, as shown in the J-M and the Arbeco products. The first is a lamp made in a variety of styles and shapes of hard rubber, intended for use in connection with dry batteries, and are fitted with bulbs of the proper kind for the service. They are light, substantial and good to look at. One is inclined to look askance, however, at lamps that are made wholly of glass, as are the Arbecos. But not only do they "stand the racket" on pleasure cars, but special models are being made for truck service. These lamps are made with an interior parabolic reflector of glass silvered inside, an exterior or body part of glass colored on the inside to match the car, and a metal ring connecting the two parts at the front where the door is attached. Between the inner and outer sections is an air space which is said to have a decided effect in rendering harmless the shocks received in service.

Little Lamp But Strong Illumination.

Among the electric lamps the latest arrival is the Roffy-Grace lamp, which is peculiar in that it throws a perfectly defined disk of light, like that of a magic lantern; and unless the eye is within the circle the light is not visible. As the light at no point is much more than four feet from the ground the chances of being dazzled are remote. The device is in the form of a vertical tube with a mushroom-shaped tungsten bulb at the bottom. Passing through a series of imported lenses, the light is reflected forward by a mirror. An opening around the bulb with a glass cylinder around it permits the emission of light to illuminate objects close to the front of the car.

Along the firing line of the army of ignition systems things are not much changed. To the line of Remy magnetos, heretofore all of the inductor type—that is, without rotating armature coils—have been added two models with wound armatures of the shuttle type. These are semi-high tension machines with induction coils for pushing the current up to the required voltage for ignition work. And the Splitdorf people have added a line of high-tension magnetos with breakers in which centrifugal force is utilized to assist the action of the breaker spring and make possible the use of lighter parts than could be or would be practicable otherwise; also a new low-tension Splitdorf magneto has been added to the line. But for the most part things are about as they were—that is to say, as far as can be discovered in advance of the actual opening of the doors of Grand Central Palace, which may reveal—no one knows just what.

Carburetters? There isn't one that isn't recognizable from a quick glance at its

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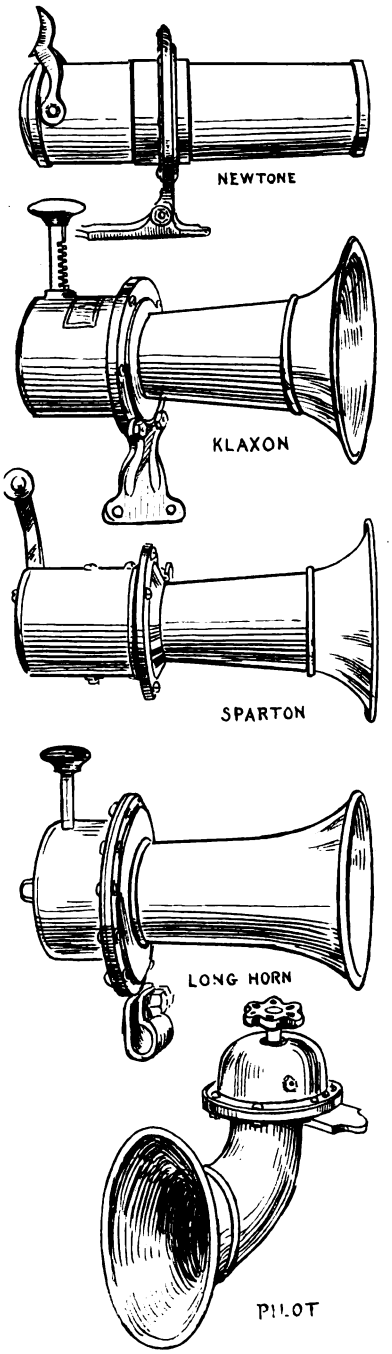
exterior, though a few have been dressed up in black nickel and enamel finishes that enhance their appearance in no small degree. The good old Schebler is on hand with the standard models, changed little or not at all; but there also is a brand new one with a single jet and an automatic control system that is new as a Schebler feature. The flow of gasolene from the spray nozzle is controlled by a needle valve, and the needle is, in turn, controlled by the automatic air valve, there being a connecting link between them. Obviously, it was no joke to work out the proper balance between the air valve, its spring, the movement of the needle and the nozzle opening; but it has been done, and the Schebler people ask nothing better than to let the carburetter speak for itself. A dashboard control for starting, which lifts the needle and at the same time, chokes the air intake, ensures a good, rich mixture for starting.

A brand new Stromberg will be shown that can be used either as a single- or a double jet instrument for four- or six-cylinder motors. The second nozzle is directly in the path of the auxiliary air and is opened or closed by a small screw that must be turned with a screwdriver. The needle-valve is over the center of the float. The two spring adjustments remain as in the older Strombergs; there is no hot-water jacket, a hot air horn being standard equipment. For easy starting there is a dash-controlled choke on both auxiliary and main air inlets, so that a very rich mixture is supplied when the motor is cranked. This carburetter is known as model G and differs radically from the well known models, especially in the matter of control, and miserable indeed will be the gasolene that they will not handle satisfactorily. Incidentally, they have become somewhat weary, up at the Stromberg place, of having their carburetters "cussed out" for faults that lie wholly in the intake manifolds; and so they're taking the bull by the horns and designing—though not making—manifolds with special reference to special motors.

Details That Have Improved Carburetters.

Dashboard carburetter control is one of those things that must be tried to be thoroughly appreciated; but once tried, the appreciation is apt to be whole-souled. This is reflected in the fact that dashboard controls are numerous and convenient, the carburetter makers and specialty manufacturers coming forward to meet the demand.

There is a tendency, not by any means amounting to a landslide, toward incorporating strainers in carburetters rather than attaching them separately in the gasolene line; the Breeze is a typical example. And dashboard control of air, too, is more common. The Rayfield carburetter has been a little altered inside by putting the needle-valve for controlling the flow of gasolene to the float chamber right on the float, in the foreign fashion. An adjunct to the Flechter is a Bowden control on the dash for regulating the air, which is particularly useful in starting. A newcomer is the Eiker carburetter, the chief characteristics of which are a horizontal spray nozzle and a simplicity so marked that it is said "any idiot" can take the carburetter apart and put it together and adjust it.



FIVE HAND-OPERATED HORNS

The chorus of horns is stronger than ever, if such a thing be possible. Undoubtedly one of the most noticeable developments in accessories is the large number of hand-operated horns, most of them built along the lines and on the same fundamental principles as the electric motor-driven horns. Less than a year ago, the Long was the only exponent, but now Klaxon, Newtone, Sparton, Clero and Pilot all have hand-operated horns.

"Shower" of Auxiliary Spring Devices.

Shock absorbers are as thick as blackberries; there is no end to their numbers. Rather suddenly, shock absorbers have increased and development has been along the line of auxiliary springs—the kind that are interposed between the two parts of a spring, or between the spring and the frame, in place of the shackle. The shock absorber that set the fashion for the world, the Truffault-Hartford, appears in an improved form, having three different degrees of friction and automatically adjusting itself to the weight of the car; but there is a brand new Hartford, too—one of the auxiliary spring kind with enclosed helical springs, made for various sizes of shackle-bolts and for various weights of cars, and, needless to add, it is worthy of the name it bears. The J. H. Sager Co., another shock absorber pioneer, also has swung over to the enclosed spring type. Then there's the Cox "Rebound E-zer," which is a recent addition to the flock and consists of a spring in a cylinder and a connecting strap attached to the car spring, the resistance of the spring and the friction of the strap calming the too exuberant action of the springs. The Cox people make the shackle type, too, and then there's the J. M., the Ely, the Rex, the Velvet and others. The Mondex is of the "friction hinge" kind, with a strong individuality; Le Telesco is a combination of the spring and hydraulic principles, in which respect it it different from all the others; the Flentje is straight hydraulic, though it mixes air with its oil to form a softer cushion; the Hertz gets its friction from a substance—don't ask what it is—in an iron box, resisting the movement of a vane; the Ames is of the reversed leaf spring kind; and so on and so on and so on.

There has been something akin to a stampede on the part of speedometer makers to get their instruments down flush with dashboards. The majority of makers will show instruments designed to be set in with nothing but a metal ring above the dash surface, the resets taking the form, in many cases, of little milled wheels projecting just far enough to be rolled under the thumb.

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Wealth of Accessories That Will Be Displayed

MOTORS

Rutenber Motors.

Rutenber Motor Co., Marion, Ind.

Models—Model 27, "four"; Model 28, "six"; Model 38, "four"—a new motor.

Features—Model 38, "four": 4⅛ x 5½; L-head; pair-cast; enclosed valves; three-point suspension, with detachable rear arms; front support fulcrumed. I-beam section for main or sub-frame; adjustable chain drive for starter and water pump; pump and starter on left side; valves, magneto and exhause and intake manifolds on right side; right or left steer optional; crankcase in two horizontal sections; 1⅞-inch valve opening and ⅜-inch lift; centrifugal cooling pump; lubrication by gear pumps submerged in oil driven off end of cam shaft by two 45-degree spiral gears; filter between reservoir and pump; dash connection for pressure gauge.

Model 27, "four," is a unit-type, 3¾ x 5¼ motor, block-cast. Model 38, "six," which was developed in 1912, has been improved for 1914 by the adoption of silent chain drive for the starter and by other alterations; it is 3¾ x 5¼, L-head, pair-cast, pump-circulated; pump, magneto and starter drive on right side.

Continental Motors.

Continental Motor Mfg. Co., Detroit, Mich.

Models—Model 6-C is a "six" and was shown last year. Model N is a new "four," characterized as the "Continental Baby" and designed for cars in the $1,000 class.

Features—Model N: Bore, 3½; stroke, 5; A. L. A. M. rating, 20.2 horsepower; brake test at 2,000 r. p. m., 32 horsepower; L-head, block cast; furnished in unit form or in independent construction; will accommodate any standard carburetter or magneto and several different starting and lighting systems; thermo-siphon cooling; designed for three- or four-point suspension. Extra large bearings. Inlet and exhaust valves interchangeable. Light reciprocating parts. Splash and force-feed oiling.

Waukesha Motors.

Waukesha Motor Co., Waukesha, Wis.

A new 4¼ x 5¾ "four" will be exhibited; ample horsepower; economy and endurance; motors built for heavy work; chrome nickel steel in highly stressed parts; spiral bearings; non-hunting governor; high-power at low speeds.

Buda Motors.

The Buda Co., Harvey, Ill.

Models—M, Q and T, "fours"; and S-S, a "six."

Features—Model M; 3¾ x 4½; thermo-siphon cooling; block-cast; nickel-plated trimmings; for truck use. Model Q; 3¾ x 5½; pump-circulated cooling system; block-cast; for truck use. Model T; 4¼ x 5½; for pleasure cars; block-cast. Model S-S; placed on market a year ago; 3¾ x 5½; block-cast. All except the model M are made in unit form or otherwise, according to specifications.

Model Motors.

Model Gas Engine Works, Peru, Ind.

Complete line of four- and six-cylinder motors in both unit power plant and separate types. Provision is made for the installation of almost any electric lighting and starting or ignition system. The latest addition to the line is the Carter motor, in which there are no stationary cylinder heads, but instead a piston-like member which is reciprocated by a camshaft and acts as a valve, covering and uncovering ports. The camshaft runs through slots in the valve-pistons and is driven by a "silent" chain.

De Luxe Motors.

F. W. Spacke Mach. Co., Indianapolis, Ind.

De Luxe motorcycle motors are made in four models—two singles and two twins; two models of motors for cyclecar use also are produced, both of ten horsepower, and one adapted for chain and the other for shaft drive. Both are air cooled and of the V type. A shaft drive assembly for cyclecar use also will be shown. The cyclecar products are new.

SPARK PLUGS

Mosler Spark Plugs.

A. R. Mosler & Co., Mt. Vernon, N. Y.

Besides the full line of Spit-Fire spark plugs which always have been a Mosler feature, the Spit-Fire "Red Tag" platinum point plugs, which are designed for especial use with magneto ignition, are to be shown. The same chamber construction, which it is claimed renders the plug free from short circuiting from carbon deposit, is employed in all of the Mosler plugs. The Vesuvius type is exceptionally rugged and because of the fact that a steel washer with two radial projections is placed on the end of the stone insulator, so that the projections enter slots in the steel shell, the insulating member is prevented from turning when the locknut is being set, and as a consequence is relieved of all strain. At the same time, the nut can be tightened up sufficiently tight to ensure perfect contact of the copper-aspestos gasket on its seat in the shell without fear of fracturing the insulator, the strain being borne by the steel piece on the insulator, so that a gas tight fit is always obtainable. A feature is the new packing adopted for this plug; it now comes in a metal box held snugly in place by a miniature Mosler catalog and instruction book, ensuring that the plug reaches the buyer in perfect condition. A new type of priming plug, in which the gasolene is squirted into a channel on the top of the shell to drain through a small passage which is controlled by a needle valve, also will be shown as well as a new plug designed for especial use with Ford cars and which goes under the name Superior. It is of the usual Mosler type, save for the length of the shell, which adapts it perfectly to the needs of the Ford motor.

Red Head Spark Plugs.

Emil Grossman Mfg. Co., New York City.

Models—Four. Regular, with porcelain insulator; Combination, with porcelain and mica insulation; Priming, with priming cup attached to shell; and Platinum Point with platinum-tipped electrodes, which will stand 3,000 degrees of heat.

Features—Porcelain guaranteed not to crack from motor heat; roomy firing chamber guards against short circuits from carbonization; metal disks that take care of expansion and contraction of center electrode are sealed in a brass cap, eliminating loss of compression; flexible cone under bushing; shell from one piece of steel; heat-treated, non-rusting.

Prices—Regular, $1; Combination and Priming, $1.50; Platinum Point, $2.

Line also includes cable, connectors, mirrorscopes, tire holders and tire locks, license tag holders, demountable rim lugs, spring bumpers, pedals, etc. Company has added long body priming plugs, commutator wiring and spark plug wiring sets, electric lighting outfits, robe rails, wheel pullers and hub caps for Ford cars.

Champion Spark Plugs.

Champion Spark Plug Co., Toledo, O.

Thirty-six sizes included in the styles—Regular, Long, Extra Long, X, Conical Mica, Porcelain Motorcycle, Mica Motorcycle, Priming Plug, Motorcycle Priming Plug, Special Small Conical, Special Small Petticoat, Champion X for Ford cars and Champion O for Overland cars. Strong plug; over-size; up-to-date machinery and careful workmanship in plant; inspection from raw to finished material.

Prices—75 cents to $1.25.

AC and AC Titan Spark Plugs.

Champion Ignition Co., Flint, Mich.

The AC Titan plug is a new model. A very large porcelain makes the insulation hard to break; the center electrode is screwed into the porcelain and cemented; a special washer is fitted on top of the porcelain and pressed down with a closed nut to prevent leakage through the center electrode. The wide seat at the bottom of the porcelain has a special corrugated washer which conducts heat from the in-

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sulator. Substantial side and center electrodes. The side electrodes are blade-shaped and have an increased diameter at the point of contact, which prevents overheating. Price—Plug, $1.25; corrugated gasket, 3 cents; porcelain, 40 cents.

The line also includes five other AC plugs and a large assortment of special plugs for Ford cars, motorcycles, etc; also priming plugs. Unbreakableness is a feature of all plugs. Price of most regular sizes is $1.

Master Spark Plugs.
Hartford Machine Screw Co., Hartford, Conn.

Models—To fit all motors.

Features—The extremely heavy porcelain core which is used makes the plug uncommonly durable and is seated on a seat that is amply wide and amply cushioned to allow for expansion and contraction under heat; the plug is very easily taken apart for cleaning.

Prices—Ordinary length, $1; extra long, $1.25.

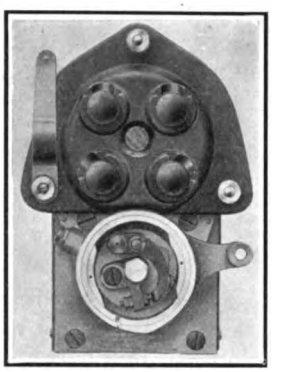
IGNITION DEVICES

Remy Magnetos.
Remy Electric Co., Anderson, Ind.

Four new magneto wheels are included in the Remy line and all of the four embrace the use of a shuttle-wound armature, a distinct departure from former Remy practice when the inductor type of magneto was adhered to. Models P and 31 are designed for use on high-speed automobile motors, the former being used with Model P transformer coil and supplying single point ignition, while the latter is used with Model 40 coil and can be used with double point ignition; the Model 40 coil includes a high-tension switch, so that either of the two plugs can be used separately or both together. Models 32 and 30 are intended for slow-speed, heavy-duty motors used on motor trucks and tractors, and the respective models are intended for single and for double spark ignition. The magnetos are dust and moisture proof and so designed that the circuit breaker is instantly accessible. The coils are of the tubular type and are claimed to be impervious to the action of either oil, water or heat; all have mounted on them a three-position kick switch fitted with a lock. Also new to the Remy line is an ignition distributer which includes a quick-action circuit breaker and is intended for use in connection with battery and non-vibrating coil ignition in place of magneto ignition.

Splitdorf Magnetos.
Splitdorf Electrical Co., Newark, N. J.

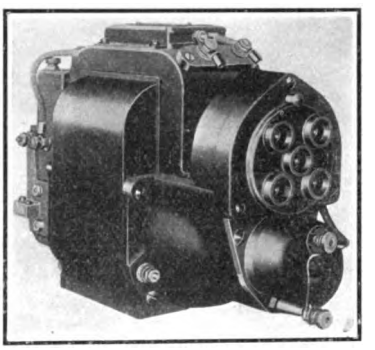
The line of Splitdorf magnetos has been increased by a new high-tension type known as Model EU-4, which is made for especial use with light high-speed four-cylinder motors. The magneto is an adaptation from the high-tension motorcycle magnetos but arranged to spark the multiple cylinder motor. The condenser is mounted on the forward end of the armature in the most approved manner and rotates with the armature. The platinum points on the circuit breaker are held together partially by the action of centrifugal force when the



SPLITDORF HIGH TENSION

armature is in rotation, so that the breaker spring can be lighter than is usually employed for the service and decreased wear results. The magnetos are fully enclosed and waterproof, and the face block being moulded with a recess in such a position that the terminals on the secondary wires cannot possibly get together, eliminates short circuits from that derangement. The magneto with suitable attaching brackets is put up for use on Ford cars and in this form is sold under the name "Ford Special."

The line of low-tension magnetos has been increased by the addition of a new model—Model A. Of the same general type as the low tension types which preceded it, the new model is made easily demountable



REMY LIGHTING-IGNITION SET

and the parts of the circuit breaker have been made interchangeable. The distributer parts are well protected from moisture so that the enclosure of the magneto has not been found necessary. The model is made only for four-cylinder motors and sells for $60 with the transformer coil.

Herz Magnetos.
Herz & Co., New York City.

Herz magnetos are made in two types—R and F—and each type in four models for 1-, 2-, 4- and 6-cylinder motors. The type R magnetos are for medium powered motors, the type F devices being intended for use on large motors. But a single permanent magnet is used for the generation of the field by which interference of the magnets of various strengths is avoided and the whole device is tightly enclosed against the ingress of moisture or oil by means of plates ground to it; no felt or other packing is used, all joints are machined to a snug fit. The prices vary from $50 to $95.

Herz spark plugs are insulated with double stone insulators the inner insulator being ground to a gastight fit in the steel shell. The stone tapers toward the electrode, forming a chamber. The outer stone, which is called blue enamel stone, relieves the inner member of all strain. The plug is made in two types for automobile motors, the ordinary length selling for $1.50 and the extra long plug selling for $2.

The Herz automatic time adjustment is designed to attach to any magneto, serving in place of the usual coupling. In its simplest aspect it comprises a pair of plates with recessed openings or channels which are tangent to the shaft, and these end plates or disks are faced to each other and balls being placed in the channels. As the speed of the rotating disks increases, the balls are thrown out by centrifugal force, and since the channels in the plates cross each other, they cause the plates to move with relation to each other so that the spark is advanced. Low tension timers and high tension distributers will be shown in a variety of forms, as well as other devices incidental to the ignition system.

Simms Magnetos.
Simms Magneto Co., Bloomfield, N. J.

Simms magnetos are made in open and waterproof types for use with four and six-cylinder motors; both independent and dual types are made. The leading feature is the patented extended pole shoe which, it is claimed, tends to produce an exceptionally hot spark at low speeds with the spark fully retarded, facilitating starting and making the use of a battery superfluous. Of course, as the speed of the engine increases and the spark is advanced, the intensity of the spark is increased so that a spark of the same intensity is available over the complete range between full advance and full retard. The contact breaker cam ring is said to ensure perfect synchronism, or uniform firing in all of the cylinders, resulting in the maximum power and a "sweet" motor.

Hi-Fre-Co. Ignition Systems.
Dean Electric Co., Elyria, O.

Hi-Fre-Co. ignition systems depend for their operation on the fact that an oscillatory current of high frequency is more effective in jumping air gaps and more effective in igniting gases under compression than the ordinary high-tension current. The system comprises a low-tension magneto in which is incorporated a special condenser, which when discharged produces

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the oscillating current, but at low voltage, so that it can effectively be insulated. This low voltage oscillating current is led to the respective cylinder plugs in the orthodox manner by means of a distributer. Before the coil enters the plug, however, it passes through a special Tesla induction coil or transformer coil, where it is stepped up to a potential where it can easily overcome the resistance of a 3/32-inch gap in the cylinder. The resonator coils are attached to the spark plugs. The advantage of the system lies in the fact that low tension wire can safely be used to lead the current to the respective cylinder plugs without any fear of short circuit, and the fact that the discharge is made up partly of invisible heat waves which are said to aid greatly in the igition of the mixture.

Rhodes Unit Spark System.
New York Coil Co., New York, N. Y.

The Rhodes Unit spark system comprises a very rapid circuit breaker mounted in the same housing with a high-tension distributer. It operates on the primary of a non-vibrating coil and the distributer guides the secondary discharge to the proper cylinder.

New in the Nyco line is a master vibrator for use on Ford cars. The device is enclosed in a wooden box which attaches to the dash of the car and is said to be very economical of current and at the same time free from trouble. A two-switch system, also for use on Ford cars, is also a new Nyco development. It is intended to permit the car to be operated either by the master vibrator or on the separate vibrators on the unit coils providing a double ignition system. While it is not in the ignition line, the new Ford accelerator which is made by the same company is interesting. It comprises an auxiliary air valve which is put up in the form of a flange gasket so that it can be interposed between the carburetter and the flange of the inlet manifold. At high speeds, the valve is opened by depressing a pedal on the floor of the car, admitting the necessary amount of added air for high speed work.

Atwater Kent Ignition Systems.
Atwater Kent Mfg. Co., Philadelphia, Pa.

Two new models of the Atwater Kent Unisparker have been developed during the past twelvemonth—one, which is known as K-2 and is supplied to manufacturers only, is similar to the automatic spark system K save in a very few minor details, and the other, which is a type F system, with the hand spark advance but with special fittings to adapt it for use on Ford cars. The Atwater Kent unisparker comprises a quick break device and a rotary distributer, both of which are shaft driven from the motor and are mounted on the same vertical shaft, and a suitable induction coil of the non-vibrating type mounted on the dash. The current is supplied either by an ignition battery, in the case of a car not provided with dynamo electric system, or from the lighting battery in the case of an electrically equipped car. The advantages claimed for the system are absolute synchronism of the sparks in the various cylinders, positiveness, durability, effectiveness and low current consumption.

Mea Magnetos.
Marburg Bros., Inc., New York City.

Mea magnetos are made in three types for various types and sizes of motors and for use with motors with one, two, four, six, or eight cylinders; they are also made for dual ignition. The principal feature is the shifting permanent bell-shaped magnet which is rotated as the spark is advanced and the circuit breaker is caused to function earlier, so that no matter at which point the spark occurs, the relation of the armature to its field is such that a spark of maximum intensity is produced. The newer Mea instruments are suitably enclosed against the ingress of dirt and moisture. The magneto is said to be very efficient at low speeds, so that the use of a battery is unnecessary.

National Magnetos.
National Coil Co., Lansing, Mich.

National magnetos are of the high-tension type and are made in several models for use on all sizes and types of motors. High and low tension coils, switches, circuit breakers and other ignition devices also will be shown.

Heinze Magnetos and Ignition Devices.
Heinze Electric Co., Lowell, Mass.

Magnetos in various types for all sorts of motor vehicle motors, together with a full complement of spark coils, dash coils, switches, vibrators, terminals and other ignition specialties.

K-W Ignition Specialties.
K-W Ignition Co., Cleveland, O.

Low-tension generators and other lighting and ignition specialties. A new generator of the induction type has been added to the line.

BATTERIES, ETC.

Exide Batteries.
Electric Storage Battery Co., Philadelphia.

Besides the usual line of Iron-Clad Exide batteries put up in suitable form for electric vehicle work, and Exide batteries for ignition work, the exhibit will comprise a new type of Exide battery which is expressly designed for use in connection with electric lighting and starting systems. Chief among the improvements in this battery, which is known as Type X, is the adoption of unit cell assembly, each cell being a complete and accessible unit in itself and not sealed in a case along with the other cells which go to make up the complete battery. The adoption of a new form of seal has opened the way for an increase in plate area, and consequently in capacity, because practically all of the space formerly used for the seal is now filled by the plates. With the filler opening as now fitted, it is impossible to overfill the batteries, for the air space necessary for the expansion is automatically preserved and overflowing and loss of electrolyte are prevented. Terminal posts are of hard bronze of ample carrying capacity with a lead protective coating and fitted with lead encased nuts and washers; the positive and negative posts are of different diameters, which precludes the possibility of making wrong assemblies. The connectors are made of roller copper ribbon lead coated. The plates are of usual Exide construction with the embodiment of minor improvements and are separated by specially selected and treated wood separators. The cells are assembled in a variety of forms and voltages to meet all conditions.

Wotton Battery Charging Sets.
Electric Products Co., Cleveland, O.

The leading feature of the Wotton line is the rotary rectifier for converting alternating current to direct current for charging storage batteries. The apparatus comprises an alternating current motor, made for either single, two or three-phase circuits and for either 110 or 220 volts, which is directly connected to a direct current dynamo. The shaft which carries both armatures is mounted vertically, to economize space, and runs on ball bearings which are submerged in oil. The motor is of the squirrel cage induction type and starting is effected by means of a solenoid-operated switch; battery current is first turned on starting the generator as a motor, the solenoid switch in the meantime coming into play until the speed of the shaft is such that the alternating current r has sufficient torque to pick up. A f course, the dynamo delivers current to charge the battery either at a steady rate, for use with Edison batteries, or in the form of a tapering charge for use with the ordinary lead plate battery. For special use with batteries which need special charging and discharging to restore them to condition, a "soakometer" attachment is fitted as extra equipment.

LBA Storage Batteries.
Willard Storage Battery Co., Cleveland, O.

Batteries for ignition, lighting and starting systems and for motor vehicle work. The batteries are of the lead plate type, are rugged and so designed that spilling or slopping of the electrolyte is impossible. A new improvement is the fitting of bolted terminals or connectors in place of the burned-on connectors formerly used.

Edison Storage Batteries.
Edison Storage Battery Co., Newark, N. J.

The newness in the Edison nickel-iron alkali storage battery line is an intermediate size, known as A-5, which has a rated capacity of 187½ ampere hours. Save for the size of the elements and consequently the size of the cell, the battery is the same as those previously made, and is intended for

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any sort of electric vehicular work. Batteries for ignition, lighting and starting will be shown in two sizes—40 and 80 ampere hours—made up in trays and connected to give 6½ volts. The vehicle batteries will be shown in the Edison special tray which permits easy loading and unloading but keeps the weight down to a minimum.

Philadelphia Batteries.

Philadelphia Storage Battery Co., Philadelphia, Pa.

Thin plate batteries for electric motor vehicle work and special assemblies for electric starting and ignition work.

CARBURETTERS

Newcomb Carburetters.

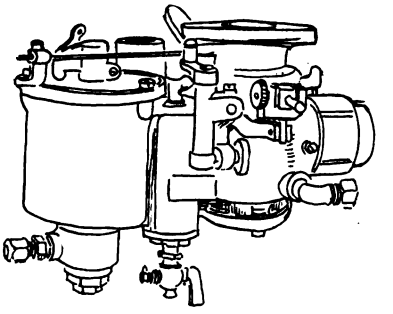
Holtzer-Cabot Elec. Co., Brookline, Mass.

Newcomb carburetters are made in a single model, in all the more common sizes. The carburetter is of the single jet type in which the amount of air admitted is controlled by the suction of the motor and the gasolene needle valve controlling the supply from the single jet is integral with the air valve, so that the gasolene supply is increased according to the increase in the air supply. The result is brought about by having the air inlet passages normally closed by a floating plunger which is raised by atmospheric pressure when the motor causes partial vacuum to be formed in the inlet manifold. The plunger is raised, therefore, in accordance with the degree of vacuum and consequently with the speed of the motor The ,· ,er is hollow and projecting into it jet, normally closed by a very long and slightly tapered needle. As the plunger rises, opening the air passages, the jet is also opened admitting more gasolene, which the suction of the motor causes to flow from the jet and through a multitude of fine holes at the bottom of the floating plunger into the mixing chamber, where it is incorporated with the incoming air. A by-pass leads around the throttle and enters the fuel passage just above the butterfly and through this gasolene is drawn at low speeds and for starting, providing a rich mixture. The carburetter is water-jacketed to provide additional heat and has but a single adjustment.

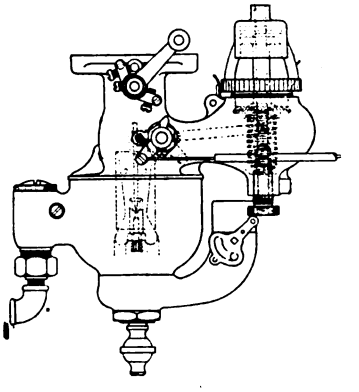
Rayfield Carburetters.

Findeisen & Kropf, Chicago, Ill.

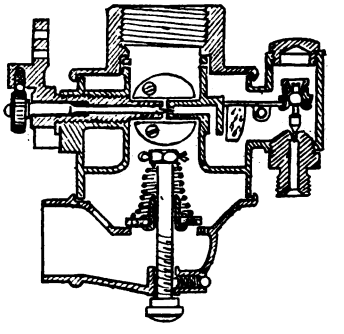
The most important change in the Rayfield carburetter is the fitting of the gasolene check needle valve directly to the float instead of to a lever, so that the needle now operates on a seat that is concentric with the float instead of offset as heretofore. This arrangement opens the way for the employment of a smaller needle and a smaller seat and a cylindrical strainer set in a vertical position is provided to keep foreign matter from entering the float chamber. Other minor improvements have been made on existing models, and a new model made expressly for use on six-cylinder motors has been added. The marking on the adjustment has been made more easily legible and a new type of float adjustment has been fitted. One of the "little" changes is the fitting of a frictional hold to the screw on the throttle stop so



RAYFIELD NEW MODEL "A"



SCHEBLER "R" SECTION



EIKER HORIZONTAL NOZZLE

that all tendency for it to work loose is obviated. As heretofore, the carburetters are made in several models to suit the needs of all motors and in all the common sizes.

Breeze Carburetters.

Breeze Carburetter Co., Newark, N. J.

A simplified form of carburetter has been added to the Breeze line since the last show. The device is without the orthodox auxiliary air inlet and is fitted with a priming device which facilitates starting the motor during the cold weather. The carburetter is claimed to be positive in action, insuring at all times a correct proportion of gasolene in the mixture.

A novelty in the way of a fuel shut-off valve also will be shown. It is known as a four-in-one valve and, as the same would imply, performs four functions. First of all, it is a stop-cock and at the same time answers the purpose of a drain. A strainer is incorporated in the device and it serves also, when the control is placed in one position, to trap a certain quantity of gasolene in the tank, serving the purpose of an auxiliary tank.

Flechter Carburetters.

Trenton Brass & Mch. Co., Trenton, N. J.

With the exception of the fitting of a steering column control for closing the air shutter across the auxiliary air inlet and at the same time keeping the main inlet valve on its seat for the purpose of providing a rich mixture for starting, the Flechter Locomotive carburetter has undergone no change since last show season. The steering column control operates through the intermediary of Bowden wire and is intended for use on those cars which are provided with automatic engine starters to facilitate the starting of the motor in cold weather. As heretofore, the carburetter is put out in four models, two of which are fitted with hot water jackets and two of which are not. One of each type is fitted with the easy starting device. All models are put out in all common sizes between 1 and 2½ inches.

Kingston Carburetters.

Byrne, Kingston & Co., Kokomo, Ind.

New in the Kingston line is a special model Y carburetter intended for use on Ford cars. The carburetter works on the same principle as the regular model Y carburetter, but the manifold opening and the controls are specially arranged to fit the Ford car. The model Y carburetter is a single jet carburetter with the control of the auxiliary air effected by the suction of the motor acting on four bronze balls of varying diameter which when seated close the auxiliary air passage. An extra choke throttle closes the air inlet for the provision of a rich mixture for starting and a well surrounds the jet so that a puddle is formed for the same purpose. When the motor has started this puddle soon disappears. The carburetter is made in both horizontal and vertical form and in all the common sizes.

Motsinger Carburetters.

Motsinger Device Mfg. Co., Lafayette, Ind.

Mechanical detail of carburetter has been improved and black nickel finish with brass trimmings substituted for brass finish. Carburetter is a single variable jet instrument, the opening of the jet being controlled by the air inlet valve, which is of such formation—inverted dome—that the air which passes is proportional to the life of the

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valve. For low speeds a by-pass around the air valve takes the form of a modified venturi. Is claimed to be economical of fuel and to give perfect mixture.

Schebler Carburetters.
Wheeler & Schebler, Indianapolis, Ind.

The Schebler carburetter line has been increased by the addition of two new models—Model R, which is new throughout and operates on a principle which is different from the principle of any other of the Schebler devices.

The new Model R is of the single jet type with the opening in the jet controlled by means of a needle which is linked to the air valve so that when the air valve opens the needle is raised from its seat and the amount of gasolene admitted is increased in proportion to the increase in the air supplied to the motor. There are but two adjustments on the carburetter ,one a low-speed needle adjustment effected by revolving the air valve cap and an air valve spring adjustment. For use in cold weather starting a dash control is fitted which lifts the needle from its seat providing the necessary amount of gasolene and a choke is fitted to the auxiliary air supply tube.

The other carburetters in the Schebler line are continued practically without alteration.

Eiker Carburetters.
Eiker Carburetter Co., New York City.

The Eiker carburetter is a new product. Its feature is a needle valve which forms the hub on which the butterfly throttle is pivoted, so that as the valve is rotated the needle is opened; thus the amount of gasolene is increased in accordance with the throttle opening and constancy of mixture approximated. The needle, contrary to usual practice, is mounted horizontally and is readily adjustable by means of a thumbscrew. The level of the fuel in the carburetter is maintained by the usual float and check valve.

Stromberg Carburetters.
Stromberg Motor Devices Co., Chicago.

Without departing from their original principles, the Stromberg carburetters have been greatly improved with a view to handling the heavy gasolene that now is common. Types A, B and C are retained with detail improvements and two new models have been added, types D and G. Both have double jets. The former is for "sixes" and big "fours" and the latter for smaller "sixes," as is indicated by its designation—the "little six" carburetter. Type G has a cut-out for the second nozzle, so it can be used with either one or two sprays, the cut-out consisting of a small screw turned with a screwdriver. In both cases the secondary nozzles are in the auxiliary air passages. Dash-operated chokes operate on both air inlets for starting. There is no hot-water jacket but hot air horn is standard equipment. Type D is made in 1¼ and 1¾ inch sizes, costing $35 and $46, and type G in five sizes, from 1 inch to 2 inches, costing from $17 to $35.

Stewart Carburetters.
Detroit Lubricator Co., Detroit, Mich.

New in the Detroit line is the Stewart carburetter. Details as to its mechanism are withheld until after the opening of the show.

LIGHTERS AND STARTERS

Westinghouse Lighting Outfits.
Westinghouse Companies, East Pittsburgh.

Westinghouse electric lighting outfits are put out in two forms, either with the contact breaker and the high tension distributer built in unit form with the lighting generator, or without the ignition devices. In both cases the basic principles of the dynamo are the case. It is compound wound with the shunt coil always in circuit and used primarily to build the voltage up to the point where the main switch or cut-out will be closed, owing to the pull of an electro-magnet in the shunt field circuit. The main switch closed, the machine is connected to the battery and lamp circuit, and also to the ignition circuit in the case of the compound instrument, and the series field comes into play to build up the field strength and increase the output of the machine. The series field current also passes through the electro-magnet which closes the main switch holding the armature in place and preventing "chattering." Regulation is inherent, being brought about by the connection of the battery through the reversed compound field winding, so that the field strength is altered under various loads to maintain the voltage constant or practically constant. The generator is fully enclosed against the ingress of dirt and dust, and the ignition system is likewise protected. One feature which is emphasized is that the system is grounded, requiring the use of only a single wire.

Westinghouse starting motors are intended to operate on six volts, and can be used in connection with the generator units which charge the starting battery. Two types are available either for gearing to the flywheel or an undergeared type for application to the crankshaft of the gasolene motor. The flywheel type is provided with a gear shift for engaging the driving pinion, which also embodies the starting switch; on depressing the starting plunger which protrudes through the dash or the floorboard, as the case may be, current first is passed through the motor through a resistance, to get it turning over at low speed to facilitate meshing of the gears; then, after the pinion is meshed with the gear wheel, the full current is introduced to start the engine. This is all accomplished by the single movement of depressing the pedal. The other type is fitted with an overrun clutch, so that the motor will drive the engine, but power is not transmitted the other way. Motors are fully enclosed and are so constructed as to draw a minimum of current and are easily mounted because of the rectangular frame. All sorts of fittings for electric systems, including bulbs, switches and connectors, as well as rectifiers and vulcanizers, also will be shown.

Remy Starting and Lighting Sets.
Remy Electric Co., Anderson, Ind.

The Remy line of starters includes both the separate and the single unit types. For use with the separate unit starters or simply as electric generators for lighting or ignition work, four dynamos are produced, two for use on light engines and two for heavier motors. For either type of motor, one of the generators is provided with a rotary high-tension distributer and with a circuit breaker so that the generator can be used in connection with a transformer coil for ignition work. On the two for high-powered motors, a reverse current relay or cut-out is incorporated with the generator, but the device is supplied as a separate unit to attach to the dash with the other types. All of the generators are bipolar shunt-wound machines with drum-wound armatures and have been designed with a special care to make the brushes and other wearing parts accessible regardless of the disposition of the apparatus on the car. Regulation so that the output will remain substatially constant regardless of the armature speed—which, by the way, is the same as the crankshaft of the motor—is effected automatically by means of a third brush, a method that has been tried and proven in railroad work, and which embraces no mechanical complications.

Four sizes of starting motors are made. One single-unit type of starter is supplied and it is novel in that while the pole piece is common both to the starting motor and the generator, each has its separate armature. The armature of the starting motor is mounted above the armature of the generator, which is not essentially different from the separate unit generators. The starting motor drives the generator through the intermediary of an overrunning clutch, which disengages when the engine takes up its own cycle of operations. There is but a single connection between the gasolene motor and the starter motor and generator. As with the other devices, it operates on six volts.

Auto-Lite Starters.
Electric Auto-Lite Co., Toledo, O.

Two-unit electric starting and lighting systems. In one system, the starting motor drives through the flywheel, through the intermediary of suitable gear teeth, the under gearing and the switch being built in unit form with the starting motor. The switch control is by means of a button on the dash which is connected to the switch by means of rods so that when the button is depressed the switch is closed, and at the same time the motor pinion is thrown in engagement with the teeth on the flywheel

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so that the motor starts the engine. When the button is released, the switch is opened and the pinion withdrawn, but should the button be kept depressed after the engine starts, an overrunning clutch in the reduction gear train precludes all possibility of harm overtaking the motor. With this system, the charging dynamo is mounted so that it can be driven in connection with the magneto, both ends of the armature shaft being tapered after the manner of a magneto shaft, so that it connects to the magneto drive shaft through an Oldham coupling and the armature of the magneto through similar means, the ignition device being driven through the dynamo. In another system, the use of the magneto is dispensed with altogether, the dynamo being provided with a suitable quick break device and with a high-tension distributer working in conjunction with a non-vibrating coil on the dash. In this case, the dynamo installation is the same, save that the armature shaft is not tapered to drive the magneto, the end serving to rotate the distributer instead. When this type is used, the starting motor is mounted in front of the engine, with the shaft vertical, and drives the engine through the intermediary of the timing gear train.

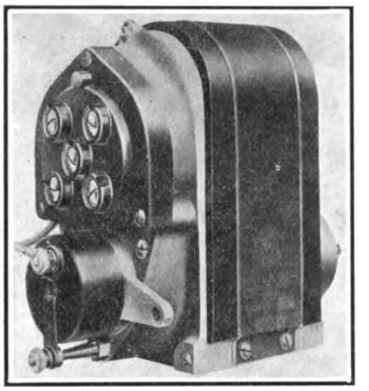
Deaco Electric Lighters and Starters.
Detroit Electrical Appliance Co., Detroit.

A single unit electric starting system which will operate on either 12 or 16 volts for starting and 6 or 8 volts for generating comprises the "newness" of the Deaco starting line. The combination is very compact, being but 5½ inches in diameter and 8 inches long. It is intended for use on light cars up to 25 horsepower and on cyclecars. With a special bracket it is supplied for use on Ford cars, either new cars or used ones. As a motor the device is, of course, series wound, but when operating as a generator it is a shunt machine. A magnetic cut-out connects the dynamo into the battery circuit when its voltage reaches the potential of the storage battery and serves also to disconnect it when the voltage drops off.

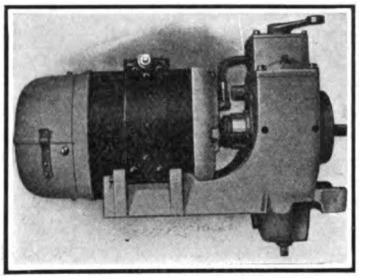
The Model C starting motor, operating on 6 volts, which was made last year, as well as the Model GF starter, will be continued practically unchanged, as will the "Baby Giant" starter, which is a two-unit type, both the motor and the generator being 5½ inches in diameter. The motor and the generator are also put out in tandem unit formation, with the motor geared to the generator shaft through the intermediary of a run over clutch. On all the Deaco generators, the control of the output is effected automatically by means of armature reaction, the effect being brought about by means of a third brush effect from the main brushes. At high speeds, part of the armature current is deflected through this third brush and through the field, counteracting the effect of the field current and weakening the field strength as a matter of course.

Hartford Electric Starter.
Hartford Suspension Co., Jersey City, N. J.

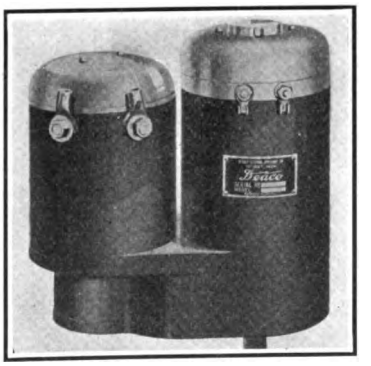
The Hartford electric starting and lighting system is a two-unit system operating on 12 volts. The motor is exceptionally small and is provided with a weighty flywheel; the gearing to the engine is 75 to 1, being effected through a worm gearing, so that the speed of the armature is normally



REMY SHUTTLE WOUND



NORTH EAST UNIT



DEACO COMBINED UNIT

about 5,000 r. p. m. This high speed, together with the energy stored up in the flywheel, provides the necessary torque to throw the pistons over compression at high speed. A clutch is interposed between the flywheel and the motor, so that the latter is disconnected from the engine immediately the engine fires. The starting motor can be installed in any of a number of places, and owing to its extreme lightness and compactness is adaptable to used cars, being attached in place of the usual starting crank. The Hartford dynamo is designed to furnish 100 watts, and this output is maintained, no matter how the car speed fluctuates, by means of a centrifugal governor which releases the armature shaft when the drive shaft speed increases above a predetermined point. The speed of the armature, therefore, is maintained constant at all times. A simple magnetic cut-out connects the generator with the battery and lamp circuit when the voltage has reached its maximum and opens the circuit again when the speed falls off. The two-wire system is adhered to, and although the starter operates on 12 volts, the batteries are split so that the lamp voltage is but 6.

Gray Pneumatic Shift and Starter.
Gray Pneumatic Gear Shift Co., Chicago, Ill.

Two units are included in the Gray pneumatic starter and gear shifter—a compressor and reciprocating air motor which starts the motor, which are built integral and are mounted at the forward end of the crankshaft, and the shifting mechanism which is mounted convenient to the gearset, to which it attaches through the interme diary of actuating rods. The compressor is a double-acting two-cylinder pump and it compresses air to a pressure of 300 pounds to the square inch into a suitable steel container located at any convenient place on the chassis; a pressure regulator disconnects the pump when the pressure reaches the proper point. The starting motor is capable of spinning the engine at a speed of 300 revolutions a minute and is controlled through the intermediary of a simple valve.

The shifting unit comprises a double-acting cylinder, with the piston rod arranged to throw the gear desired either into or out of engagement when pressure is admitted to either end of the cylinder by depressing the clutch pedal. The selection of the gear is made by a selector dial mounted on the steering column over which a pointer lever works; this lever operates a crankshaft, and the shifting mechanism so that the cylinder rod is connected to the proper gear actuating lever. Auxiliary apparatus, consisting of a gauge, compressor control, starter valve, shutoff and tire inflation outlet is mounted on a suitable plate on the dashboard of the machine.

Gray & Davis Starting and Lighting Sets.
Gray & Davis, Amesbury, Mass.

Gray and Davis dynamos are built in two sizes, the smaller of which develops 8½ amperes at 6½ volts and the larger 10 amperes at the same potential. The machine is compound wound, the series field coming into play only when the lights are burning to take care of the additional load which the lights throw on the circuit. The dynamo is of the constant speed type, the speed being controlled by means of a friction clutch which operates on the centrifugal force principle, so that the armature is released when the speed, on the smaller machine, reaches 1,000 r. p. m.; on the larger machine the clutch begins to slip at 700

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r. p. m. The clutch, which is Raybestos faced, is contained in the instrument itself and provision is made for cooling it by means of radiating fins. An automatic magnetic cut-out serves to disconnect the dynamo from the battery line when the voltage falls below that of the battery; this is a separate unit and is placed on the dash.

The starting motor is a four-pole 6-volt series-wound machine and is arranged to drive the gasolene engine through a pinion which engages with teeth on the periphery of the flywheel. The motor is fully enclosed and will turn the motor over at 100 r. p. m. The system complete with the battery switch and necessary wiring and appendages sells for $250.

Jesco Electric Starters.

Jones Electric Starter Co., Chicago, Ill.

Following the trend toward electrical systems which perform all three functions—of starting, lighting and supplying the ignition current—the Jones Electric Co. has brought out a new system which embraces both the dynamo and the starting motor, as well as the distributor and the quick break device, all in a single unit. As is the case with the other systems which are produced by the same company, and tending toward limiting the total weight of the installation by reducing the battery weight to a minimum, the system works on a maximum voltage of six. The new unit system is made very compact and light and is intended primarily for use on light and medium weight cars. The various other types of Jesco starting and lighting outfits will also be shown, together with a new 6-volt system for heavier work, but in which the ignition function is eliminated.

Kemco Generators.

Kemco Electric Mfg. Co., Cleveland, O.

The Kemco generator is combined with a cooling fan and is intended to replace the cooling fan on the car, the same bracket or special bracket being used for its installation, as the case may be. The generator is all embraced in the hub of the fan, and is belt driven in the orthodox manner of driving the fan. The field is stationary, the armature being arranged on the outside of it; the construction opens the way for rapid dissipation of heat and for large brush contact surfaces, both tending to make the device more efficient. The fan is driven at 2½ times the crankshaft speed and develops its maximum output—15 amperes—at a car speed of about 40 miles an hour. The generator is so constructed that further increase in speed is accompanied by a drop in the output, so that all fear of burned-out generator or bulbs or damage to battery through too high charging rate, is removed. The output of the generator can be regulated to suit the batteries installed, and when batteries are used an automatic cut-out to disconnect the generator when its speed is too low, is supplied. All parts of the generator which can be formed of non-magnetic metal are formed of aluminum for the sake of lightness, the whole device weighing only 10 pounds.

Kellogg Starters and Pumps.

Kellogg Mfg. Co., Rochester, N. Y.

An air starter designed especially for use on Ford cars is the newest Kellogg development. It comprises a pump which forces air to a steel tank carried at any convenient point on the chassis and a cylinder in which is a piston which is attached through suitable connections to the crankshaft of the motor. When air is admitted to the cylinder, the piston is driven toward the other end and power is transmitted to the crankshaft, which is turned over at a high rate of speed. The system offers the additional advantage that the air can be used in the tires.

The regular Kellogg air starter is supplied in three sizes: For light cars, a two-cylinder compressor being used; for medium-weight cars, in which type a four-cylinder compressor is used, and for heavy cars, with which a six-cylinder compressor is used. The system includes simply the pump, a steel air reservoir and a distributing valve which distributes the air to the cylinders; this is built in unit form with the pump. The system has been improved by the fitting of an all-metal pump and the six-cylinder air pump, quite new and revolutionary. Also new in the Kellogg line is a priming device for use in cold weather. The line also includes foot and power pumps, pressure indicators, valve grinders, tire gauges, grease guns and other devices.

Ward Leonard Electric Starters and Lighters.

Ward Leonard Electric Co., Bronxville, N.Y.

Models—Made in various sizes and forms for application to different makes of cars.

Features—Whereas the Ward Leonard system last year was made in but a single size, the new line comprises dynamos and motors in several different sizes and several varying types of mounting, making the set more versatile. The basic principles of the system, however, are unaltered, the governing system remaining intact and comprising simply a single step of resistance which is inserted when the current tends to mount above a certain limit; the resistance is only inserted intermittently, however, by means of a vibrating relay operated by suitable electro-magnets. The greater the current, the faster the vibrator operates and the longer the resistance is in line.

U. S. L. Starters.

U. S. L. & Heating Co., New York City.

While no improvements of a radical nature have been made in the U. S. L. system, minor changes which tend to make the device more nearly ideal for the service have been made. Thus, for instance, while the motor generator still is incorporated in the flywheel, the carbon disk regulator has given way to a simpler regulator which is devoid of mechanical appendages and which is incorporated directly in the machine. It comprises special field windings which make the regulation inherent with the generator. Following the trend toward the production of lighter starting equipment, the voltage of the system has been cut to 12 volts instead of the 24 which formerly obtained, opening the way, of course, for lighter battery equipment. One other minor fitment has been added; it is a hand-operated cut-out switch for cutting the batteries out of circuit when fully charged or when the machine is travelling at high speeds with lamp load off, preventing gassing and overheating of the cells. The U. S. L. batteries have been changed only in the dimensions of the cells, the construction and the capacities of the respective models remaining to all intents and purposes the same.

North East Electric Starter.

North East Electric Co., Rochester, N. Y.

The North East electric starter and lighting outfit will be shown in three new models. Model B is for use in connection with large four-cylinder cars and six-cylinder machines; model D, for use on four-cylinder models with cylinder bores of up to four inches, and a model build expressly for use on Ford cars. The basic principles of all three models are the same, the difference being chiefly in the size and the manner of drive. The model B embraces the use of an automatic gear arrangement, which engages the proper gear for use of the single unit as either starter or charging dynamo. The starting necessitates only the pressing of a button on the dash, which serves to operate the switch, which breaks no main line currents and is therefore free from contact troubles. When the motor starts, the button is released and the gears automatically alter to provide the correct drive for the dynamo. On the other two models, direct drive, through the intermediary of a silent chain driven countershaft is provided. The battery always is charged in series and a neat switch lock is provided to prevent tampering with the mechanism.

Vesta Lighting Outfit.

Vesta Accumulator Co., Chicago, Ill.

The Vesta magneto generator has been improved only in minor details, the size having been reduced slightly and the weight proportionately; the batteries have been improved, however, the plates being made by a new process and the size and shape of the jars altered, while the battery line now includes a full complement of batteries for use in electric vehicle work, which also are made by the new process. The Vesta generator, as heretofore, is governed by means of a simple ring type centrifugal governor mounted directly on the armature shaft, which serves to cut the instrument into the battery circuit when the armature speed is such that the output is about 1 ampere in circuit with the battery. As the speed increases, the output builds up to 9 amperes, when a single step of resistance is inserted by the action of the governor cutting the output down again to 6 amperes, from which it can build up to 9 again. The whole

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apparatus is enclosed against the ingress of dirt or moisture. A new two-volt electric lighting system, which is similar to the larger type but is made expressly for use on motorcycles, will be shown.

Thurber Starters.

Thurber Rotary Starter Co., Detroit, Mich.

The Thurber starter is a compressed air starter, the air being compressed into a suitable steel cylinder by means of a two-cylinder air compressor, from which it is drawn to a rotary air motor which supplies the starting power. The system has been improved to the extent that the pump and the air motor now are contained in a single unit, necessitating but a single connection to the gasolene motor in place of the two connections which were necessary with the separate unit system; the pump has been made silent in action. Installation is made in very much the same manner as with the electric starters, through the intermediary of flywheel gears, a gear train to the crankshaft or other suitable means. A smaller unit, but exactly the same in principle, which is intended for use especially on Ford cars, is being developed.

Holtzer-Cabot Electric Lighting System.

Holtzer-Cabot Elec. Co., Brookline, Mass.

The Holtzer-Cabot system comprises a variable speed shunt-wound dynamo which delivers its current under normal conditions at 8 volts. The dynamo is substantially a slow-speed instrument and is rugged in construction and adapted to meet any or all conditions. Regulation is inherent, the happy result being brought about by the shape of the pole shoes, so that with speeds above normal part of the magnetic field is deflected and the field strength weakened; a drop in the voltage is the natural result. The Holtzer-Cabot instrument is made with particular care to make the working parts—the brushes and the commutator—easily accessible and is entirely enclosed against the ingress of dust and moisture. It is sold either with or without the storage battery.

Rushmore Starting and Lighting Systems.

Rushmore Dynamo Works, Plainfield, N. J.

Electric lighting systems and combined lighting and starting systems.

The Rushmore generator is of the shunt wound type in which output regulation is governed by a "bucking" coil, the insertion of which in the field, in turn, is governed by the temperature, and therefore the resistance of a small coil of iron wire contained in a housing on the top of the generator. In the combined lighting and starting system the motor is separate and is geared to the gasolene engine through the flywheel. Its gears are automatically thrown in and out of engagement by the depression of a button.

Disco Starting and Lighting Systems.

Disco Co., Detroit, Mich.

Disco electric lighting and combined electric lighting and starting systems. One of the conspicuous features of the Disco always has been narrowness, permitting installation in places where space is scarce. In the dual unit system the generator and motor are mounted one above the other, maintaining the narrow feature. There is but one gear connection with the engine; when the engine is driving the generator the starting motor is freed by an overrunning clutch. A new form of automatic cutout prevents the battery from discharging back through the generator.

Dyneto and Entz Starters.

Dyneto Electric Co., Elbridge, N. Y.

Besides a new electric lighting and starting system, the details of which will not be divulged until the show opens, the Dyneto combined electric lighting dynamo and ignition system will be shown. The dynamo is a slow-speed generator and is fitted with a cutout which disconnects the device from the battery when the voltage drops below the voltage of the cells. The high-tension distributer and a suitable circuit breaker are incorporated in the instrument. The Entz starter also is a Dyneto product.

SIGNALING DEVICES

Tuto, Rexo and Maxo Warning Signals.

Dean Electric Co., Elyria, O.

Tuto horns, which are of the electro-magnetic type, are distinguished by the fact that by proper manipulation of the button either a low tone or a loud, clear warning note is produced. The effect is brought about by the use of a double contact button which is positioned on the steering wheel and which in one position inserts a resistance in the line, reducing the amount of current and lowering the volume of the sound; in the other position, the resistance is cut out and the full blast is produced. Finished either in brass, nickel or black enamel and furnished with the necessary wire, button and brackets, the horn sells for $15.

The Rexo II is designed to take the place of the Rexo horn. The mechanism has been simplified and the cost of production greatly reduced, so that the revised mechanism sells for $3.85. Like the Tuto, it operates on the electro-magnetic vibrator principle, but the two tone feature is lacking. The Maxo II horn likewise is designed to replace the Maxo motorcycle horn and is simplified in the same manner as the Rexo horn and sells for the same price. A special Rexo model for use in connection with Ford cards is also a new product.

Newtone Horns.

Automobile Supply Mfg. Co., Brooklyn, N. Y.

Models—M, N, Torpedo, Superior, Combination, Motophone and bulb.

Motophone—A new model; mechanically operated. Mechanism consists of a push handle, a spring governor and a notched wheel which strikes a button on a diaphragm and vibrates the latter; the governor prevents the wheel from revolving at more than its proper speed, no matter how fast the lever is moved. Price—$12.

Type M—Operated by armature which actuates a notched wheel which strikes a button on a vibrating diaphragm; has long, narrow projector and flared end. Features claimed for all electric types are loud, penerating sound, low current consumption and accessibility. Price—$20.

Type N—Short, flared projector; electrically operated. Price—$18.

Torpedo—Similar to Type M. Price—$20.

Combination—Consists of a bulb horn combined with a Torpedo. Price—$30.

Rubes Bulb Horns—Made in 17 models and sizes; fitted with non-corrodable reeds. Prices—$1.25 to $5.

Klaxon Horns.

Lovell-McConnell Mfg. Co., Newark, N. J.

Hand Klaxon—A new model. Operates on the Klaxon principle of a steel diaphragm set in violent vibration by means of a toothed wheel; toothed wheel is set in motion by a train of gears which receive their initial motion from a hand push rod. Price—$10.

Klaxon—In four types; same vibrating diaphragm principle as in hand horn is employed, except that the notched wheel is operated by a small motor. All electric horns are finished in brass, black enamel, nickel, gun metal, black enamel and brass or black enamel and nickel. Price—$35, with exception of a combination horn, which is $50.

Klaxonet—A smaller horn; four models. Price—$20; combination, $30.

Klaxet—A still smaller horn; in one type only. Price—$12.

Monoplex Signals.

Atwater Kent Mfg. Co., Philadelphia, Pa.

Monoplex horns, which are of the electro-magnet vibrator type, embracing but one moving part which responds to the influence of the electro-mognet setting the steel diaphragm in vibration, are made in two styles—with a long and with a short projector. With a long projector, the horn sells for $10, while the short projector type sells for $8, the mechanism being identical in both cases. The horns are furnished in three finishes—black enamel with polished brass bell; black enamel with nickel bell, and all black enamel. Push button and the necessary cord accompanies the instrument.

Sparton Horns.

Sparks-Withington Co., Jackson, Mich.

Models—D, U, B, J; motor-driven. J and B; lever operated.

Features—In the motor-driven types a notched crown cam on the end of the armature shaft actuates a button on a tungsten steel diaphragm, causing the diaphragm to vibrate and emit a loud sound. Low current consumption and loud sound are claimed. Off-centering of the motor is a new feature. The lever-operated type—

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known as the Sparton Echo—is the same in its sound-producing mechanism except that a lever actuates the cam. Wearing parts have been made durable and it is claimed that adjustments can be made with a screwdriver without taking the horn apart. A new push button has been brought out for the electric horns; it can be operated by pressure from any direction, thus making it easy for the driver with heavily-gloved hands.

Prices—D, $15; U, $14; B, $10: J, $10. Echo—J, $7; B, $8.

Olympic Horns.

Electric Spark Appliance Co., Inc., New York City.

Models—A, B, C, Ford, and Mechanical. First four are electric.

Features—Electric vibrator horn; sparkless; no spark thrown when magnet comes in contact with the vibrator; no delicate contact points to burn; perfectly insulated; all springs steel-leaved; no parts to break off or work loose; self-adjusting; tuned by turning diaphragm screw in mouth of projector; penetrating, powerful tone; current consumption less than two amperes; ironclad three-year guarantee. Weights, A, 5¼ pounds; B, 5; C, 4.

Prices—A, dash type, complete with button and wiring; black and brass, black and nickel or all black; $7.50. B, hood type; button and wiring; in black only; $6.50. C, Olympic Junior; button and wiring; black and nickel, black and brass, or all black; $6.

Reacto Horns.

Holtzer-Cabot Elec. Co., Brookline, Mass.

Reacto horns are of the hammer blow type, the hammer being actuated by an electro-magnetic device and acting directly on the diaphragm of the horn. The horn is said to be economical of current, and free from trouble and is made in but a single size. Without equipment the signal sells for $10. With push button and the necessary cable it sells for $11.50, while with flexible brass tube to carry the cable up the steering colmun, the price is $12.50. The horn is finished either in black enamel with the throat polished nickel or in black enamel with a polished brass throat.

Sireno Signals.

Sireno Co., New York City.

Sireno signals comprise a motor-driven siren in a casing at the back of the projector. Power to operate the motor is obtained from either dry or storage batteries. The signals are made in a variety of different styles and sizes to accommodate them to all needs.

Gabriel Exhaust Horns.

Gabriel Horn Mfg. Co., Cleveland, Ohio.

Single tube horns are made in four sizes —25, 28, 32 and 34 inches long. Trumpet horns with four tubes are made 28 and 32 inches long. Trumpet horns with four tubes are made 28 and 32 inches in length. The Musical Wonder is made with ten tubes and a keyboard. The horns are easily attached and are claimed to be free from clogging and sooting. The single tube models sell for $15, $18, $25 and $35 each. Trumpet models, $75 and $80. Musical Wonder, $175.

Clero Horns.

Fitzgerald Mfg. Co., Torrington, Conn.

Models—Three. Clero Vibrator, Clero Ford Magneto and Clero Hand.

Features—A new product. Sound in all three is produced by a steel diaphragm which is set in violent vibration. In the first two named models the vibration is effected by electrical means. In the Clero hand horn the diaphragm is actuated by ball-bearing wheels, easily set in motion by a slight pressure of the hand or elbow. Horn contains but one moving spring. Is simple in construction. Is guaranteed for one year.

Pilot Signals.

Nonpareil Horn Mfg. Co., New York City.

The Pilot signal is a mechanically operated diaphragm horn which is operated by means of a hand wheel in one type or through the intermediary of a Bowden wire transmission system in another. The signal is put out with several different projectors, but the mechanism in all models is the same and comprises a revolving cam wheel which actuates the diaphragm. Bulb horns in a variety of styles and sizes also are made.

Jericho and Jubilee Horns.

Randall-Faichney Co., Boston, Mass.

Features—Of the exhaust-operated type; give musical and chime notes; controlled by a heel pedal. Jericho and Jubilee have different musical combinations. Prices—Jericho, $7 to $10; Jubilee, $8 to $10.

A special Jericho for Ford cars have been placed on the market this season. Motorcycle models are provided. Price—$5.

SHOCK ABSORBERS

Truffault-Hartford Shock Absorbers.

Hartford Suspension Co., Jersey City, N. J.

Hartford Cushion Springs—A brand new product. They are of the enclosed helical spring type and are designed to replace the spring shackle on full- or three-quarter elliptic springs and are made in a variety of sizes to accommodate varying widths in the springs and varying diameters of the shackle bolts. They are made in five sizes: For cars of 3,000 pounds or over; for cars between 2,400 and 3,000 pounds; for cars between 1,800 and 2,4040 pounds; for cars of less than 1,800 pounds and special springs for Ford cars. The respective models sell for $35, $30, $25, $20 and $20 a pair.

Truffault-Hartford Shock Absorbers—Are made in five sizes, the leader of the line being the new automatic model with three degrees of friction which automatically accommodates itself to the weight of the car. The shock absorber comprises a pair of arms pivoted together at approximately right angles with frictional surfaces interposed, the bearing of the surfaces upon each other being controlled by means of springs. The ends of the two arms are pivoted to the axle and to the chassis frame, respectively, and their resistance to movement in either direction tends to damp out excessive oscillation of the springs. They are easily attached and are trouble-proof. Besides the automatic type, four others are made for cars of the following weights: Over 2,500 pounds; from 1,800 to 2,500 pounds; below 1,800 pounds, and for Fords.

Prices—$60, $50, $40, $25 and $15, respectively, for set of four.

Universal Shock Absorbers.

Universal Shock Eliminator Co., New York City.

Universal shock absorbers are a brand new product. They are intended to replace the link shackles on the rear springs and are made in three forms to accommodate full or three-quarter elliptic springs, or for use in connection with platform springs. In the latter type, the side spring is pintled to a ball which is enclosed in a suitable housing so that the whole makes a ball and socket joint giving very great freedom of movement. The ball is held in place by means of a light helical spring which is contained in a tube which attaches to the housing and which is slotted for the reception of a second ball. The end of the cross spring is pivoted in this second ball. A heavier coil spring also bears down on the second ball and is held in place by means of an end cap over the tubing. The slot in the tubing is sufficiently large to allow plenty of room for the spring action. In the other type the same principle obtains, but a lever attaches to one of the spring ends while the other terminates in the ball, the lever acting directly on the enclosed springs. The absorbers, which are very easily attached in place of the orthodox shackles, sell for $50 a pair.

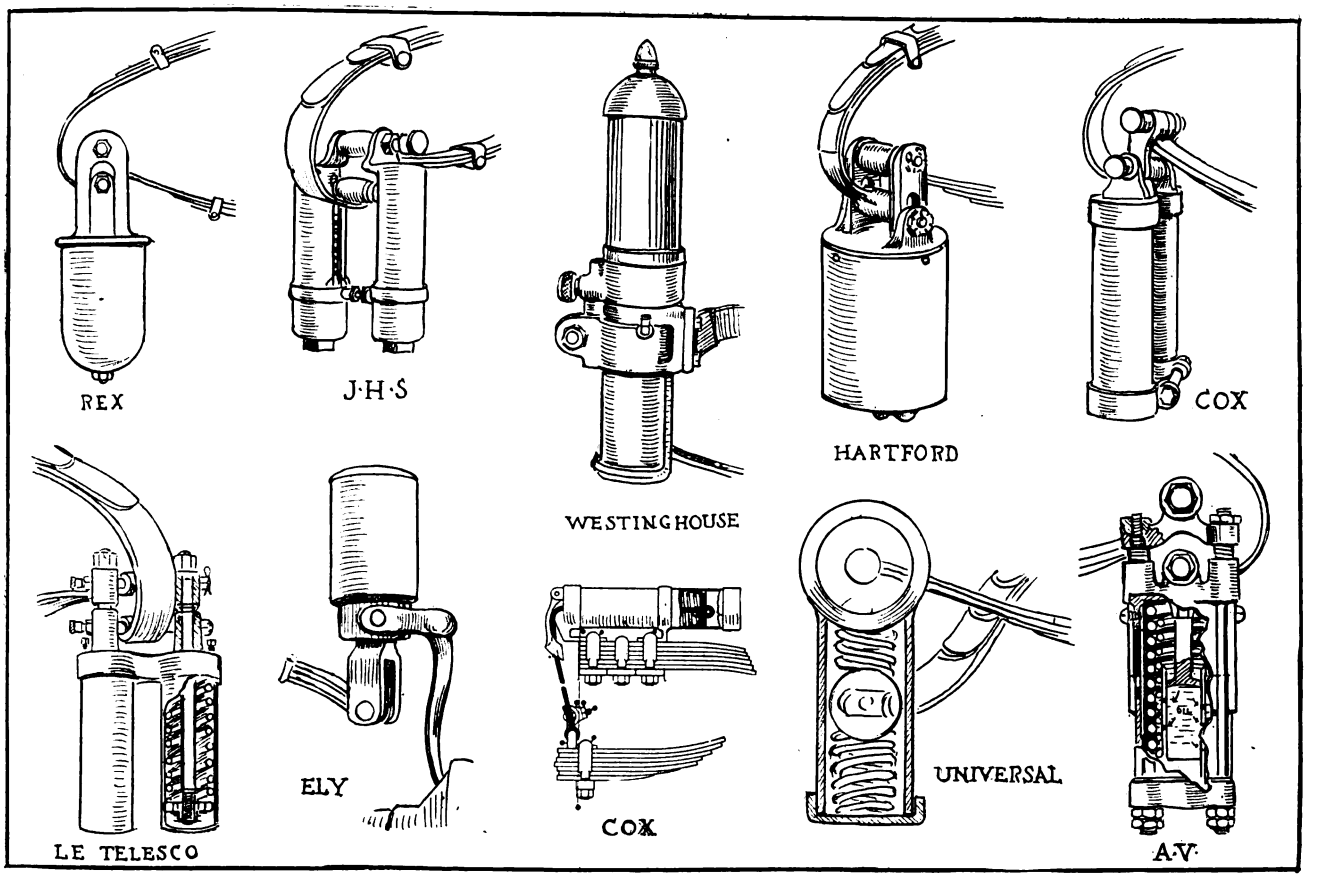
Cox Shock Absorbers.

Cox Brass Co., Albany, N. Y.

Cox Rebound E-Zer—A new product; consists of a cylinder, enclosing a spring, which attaches to the top of an upper spring near its center; a four-ply, 1¼-inch canvas belt runs out the end of the cylinder and attaches to the center of the lower spring. When the springs are compressed, the spring in the cylinder draws the slack belt in and when the springs tend to rebound the strap retards action. Attaches with special clips. Belt will withstand any weather. Price—$15 per set.

Cox Shock Absorbers—A new product; consists of a pair of cylinders in which two pistons run, a slightly tapered helical spring being positioned between the piston head and the upper end of the cylinder; the cylinders attach to one spring member and the piston to the other; the tapering of the spring is designed to give range of action, the smaller end responding to weaker

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DIVERSITY IN SHOCK ABSORBERS SHOWING THE TREND TOWARD ENCLOSED SPRING SHACKLE DEVICES

shocks; made for front and rear springs; an original feature is the offsetting of the connecting bar, making it possible for the absorber always to maintain an upright position. Price—$25 to $35.

Rex Shock Absorbers.

Mechaley Auto Co., Stamford, Conn.

The Rex shock absorber consists of a double volute spring within an oil tight case, so positioned that it takes up the up-and-down vibrations of the car; a single steel rod passes through the absorber vertically and a single nut permits adjustment. Is made in different sizes for different weights of cars. An air cushioning device has been incorporated as a new feature, the spring in this model being single volute.

A. V. Shock Absorbers.

Hudson Export & Import Co., New York City.

Made in Europe by A. Vermersch & Cie. and is new in America.

Features—Hydro-pneumatic-spring type. Has two telescoping, air-tight, cylindrical sections, encasing two spiral, concentric springs of different-sized wire, and has inside the springs, attached to the bottom of the chamber and extending half-way to the top, an oil chamber. A piston which attaches to the upper half of the cylinder casing of the device works in the oil chamber. Small passages permit the oil to be forced out of the oil chamber when the absorber is compressed and drawn back in when the absorber is extended; the oil level in the device casing is always at about the height of the small oil cylinder. The springs, pneumatic action and oil all combine to damp out shocks of every proportion. Simple and fool-proof. Easily attached.

Prices—$35 to $55 per pair.

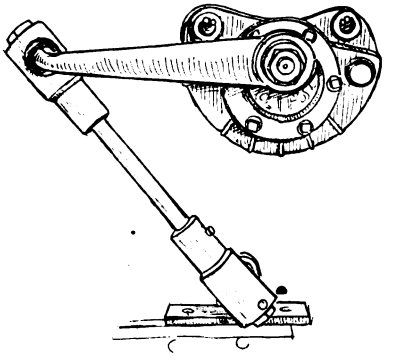
Flentje Shock Absorber.

Ernest Flentje, Cambridge, Mass.

Models—Made in one model to fit all cars.

Features—Consists of a piston working in a cylinder; no springs. Cylinder heretofore contained oil and ground mica, but in 1914 models air and oil have been successfully combined. Also, the valve, piston and stuffing box have been improved. On even roads the air in the cylinder remains on top of the oil, allowing the car springs free play, but on rough roads the oil is forced through a four-port by-pass. Former models contained but two ports. The four ports are opposite each other and on rough roads the oil takes the air from the top of the chamber and in forcing it through the four ports causes it to take a bubble form. This is designed to make the absorber more flexible and automatic than previous models.

Price—$100 for a set of four, attached to the car.



HERZ SHOCK ABSORBER

J. M. Shock Absorbers.

J. M. Shock Absorber Co., Philadelphia.

Models—Four. Model A; two spring containing members and attachable to cars with platform or three-quarter elliptic springs. Model B, single spring containing member, attachable to cars with full- or three-quarter elliptic springs. Model C, adaptable to cars with single springs attached to rigid spring hangers. Model F, for Fords only. Models A and C are made for use on cars up to 2,000 pounds, between 2,000 and 3,000 pounds, and over 3,000 pounds. Model B is made for cars above and below 3,000 pounds.

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Features—Helical springs enclosed in metal cylinders; resiliency of the suspension increased; easily applied in place of shackle.

Prices—Models A, B, C and F, for light cars, $35 a pair. Models A, B, and C, for medium-weight cars, $42 a pair. Models A, B and C, for heavy cars, $50 a pair.

Velvet Shock Absorbers.

John W. Blackledge Mfg. Co., Chicago, Ill.

Models—No. 1, for cars less than 2,200 pounds; No. 2, 2,200 to 2,800; No. 3, 2,800 to 4,800; No. 6, above 4,800. Ford model, for Ford cars.

Features—Attach in place of the spring shackles; consist of four springs, encased, which take up road shocks. The Ford model is new and is now being placed on the market. Velvets are claimed to be the only absorbers using 16 coils to the set. Neat and compact. Whereas the cases in former models were attached by means of a bolt which passes through the case at the top by way of its shortest thickness, a firmer positioning has been accomplished by the addition of set screws at the ends of narrowest width.

Price—$35 per set.

Gabriel Rebound Snubbers.

Gabriel Horn Mfg. Co., Cleveland, O.

Rebound snubbers comprise a loop of belata belting which goes around the axle and which is wound around a compressible hub held stationary in a casing fastened to the chassis frame. When the belt is slacked by the axle approaching the frame, as in the case of a bump, the hub expands and tends to take in the slack; when the belt is brought taut again, the hub "snubs" the belt, the friction tending to damp the action of the spring on the rebound. The snubbers are put out in five sizes: For cars lighter than 1,400 pounds; for cars between 1,400 and 2,200 pounds; for cars between 2,200 and 3,500 pounds; for cars over 3,500 pounds, and for motor trucks from two to five tons in weight. The prices of the respective models are $25, $30, $35, $40, and $50 a set of four.

Herz Shock Absorbers.

Herz & Co., New York City.

A foreign device, the manufacture and distribution of which has recently been taken up by Herz & Co. Has been used several years abroad.

Features—A cast iron box, containing an inalterable specially compounded substance, is attached to the frame of the car; in this box between two bearings swings a lever to which, on the outside, is attached a lever with a ball socket on the end; a rod connects the socket end to a ball joint fastened on the spring of the car; a small resistance is produced within the cast iron box and a greater resistance is automatically generated by a greater spring oscillation; this ability to meet every vibration with proportionate resistance is claimed as an exclusive feature; holds the wheels to the road.

Le Telesco Shock Absorber.

Le Telesco Co., Baltimore, Md.

Models—Three.

Features—Le Telesco shock absorber is a French product, the American rights to which were secured less than a year ago. It operates on the spring and hydraulic principle. The device consists of two cylinders, the piston rod of which attaches to one spring end and the cylinder to the other. Oil is contained in the bottom of the chamber; the spring is between the piston head and the cylinder head. The first portion of a shock—when the body goes down—is taken up by the spring, while the oil and by-pass effect a slackened reaction. Company claims to have the only spring-hydraulic device on the market.

Price—$50, $55 and $60 per set.

Mondex Shock Absorbers.

Fischer Motor Corp., New York City.

Models—One, for all cars.

Features—Consists of two arms which attach to the axle and side frame and meet at an angle; change of angularity is resisted by the friction of steel and brass disks and compressed rubber. Can be adjusted to wear or to suit conditions.

Price—$50 for set of four.

Company also makes and will exhibit the Mondex-Helix gas saver and a body polish which has been brought out within the last year; the polish is claimed to be not affected by water and to give a luster.

J. H. S. Shock Absorbers.

J. H. Sager Co., Rochester, N. Y.

Features—J. H. S. shock absorbers comprise a piston and coiled spring enclosed in a metal case, containing grease; they have been newly placed on the market by the Sager company; for three-quarter elliptic springs, the absorbers consist of two sets of springs; for Fords and light cars and for semi-elliptic springs one coil is used. Guaranteed for one year from date of purchase.

Prices—Single tube (for Fords only), per pair, $15; per set, $25. On all other cars: Twin tube, per pair, rear, $25; single tube, per pair, front, $15.

Ely Shock Absorbers.

Donnelly Motor Equipment Co., New York City.

For Ford cars.

Features—Consists of a spiral spring encased in a metal cylinder; spring attaches to end of car spring; cylinder attaches to spring seat; takes up all vibrations and renders riding easy; of high-grade steel; finished in specially prepared black rubber; guaranteed for one year.

Price—Set of four, $12.50; set of two, $7.

Ames Shock Absorbers.

Clarence N. Peacock & Co., New York City.

Features—Consists of a reversed three-leaf chrome vanadium steel spring which is attached to the lower spring member at the center; the three reversed leaves are separated from the lower spring member by a spacing block; tend to retard rebound when body of car moves upward through road irregularities; claims to be only absorber utilizing the principle of leaf construction; operates on two contact surfaces.

Price—$45 for set of four.

Westinghouse Air Springs.

Westinghouse Air Spring Co., Pittsburgh.

Device consists of an air chamber made up of two sections, one of which telescopes into the other. The outer section is attached to the car frame by means of a bracket; the inner attaches to the spring. The chamber is partly filled with oil which keeps the chamber air-tight and which also moves through a by-pass, avoiding jerky motion. As the oil collects in the lower part of the spring it is pumped back to the upper part by a pump which is actuated by the spring motion. The air within the spring may be put at any desired pressure by pumping with an air pump. Maximum vertical movement of six inches.

BUMPERS

Hartford Bumpers and Jacks.

Hartford Suspension Co., Jersey City, N. J.

Hartford bumpers are sprung by means of two four-leaf friction spring arms which clamp to the front of the frame, being held solidly in place by a single U-bolt provided with lock nuts. The bar, which is made of steel tubing covered with the brass sheathing for the sake of appearance, is filled with a cement-like composition which is said to add considerably to the strength of the bar and at the same time to prevent the denting of the bar. The bumpers are easily attached and the bars are adjustable simply by loosening a single bolt. Hartford bumpers are put out in four sizes: For cars of 3,000 pounds or over; for cars from 1,500 to 3,500 pounds; for cars below 1,500 pounds and for Ford cars. The prices of the respective sizes are: $20, $16, $12 and $12.

The Hartford jack is of the rack-and-dog type, the rack being on a wheel and the dogs being carried on the lever. Because of the fact that the device is geared with spur gears, the leverage is greatly increased and the labor involved in raising a car considerably lessened. The jack is made of the best materials obtainable for the purpose, is compact and practically indestructible and sells for $6.50.

Sager Bumpers.

J. H. Sager Co., Rochester, N. Y.

Models—Eleven.

Features—Diamond and Protection attach with a special spring shackle bolt; Diamond has a brass bar reenforced with steel which is rectangular in section; Protection has round bar with wood filler; both made in five different finishes. Universal Diamond, Universal Channel and Universal Diamond attach without drilling frame; helical springs are concealed in bracket which supports

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bar; Universal has round steel bar; Universal Channel a channel bar; Universal Diamond a rectangular bar; each made in four finishes. The Fit-On is a clamp-on type and fits all save Fords; made in three finishes. Simplex, Simplex Channel and Simplex Diamond clamp on and have concealed springs. Packard Special and Ford Special are applied without machine work. Durability and ease of attachment are claimed.

Prices—$7.50 to $27.50.

E. G. Bumpers.

Emil Grossman Mfg. Co., New York City.

Types—Made in 8 models—with 1¼-inch tube bar, 2-inch tube bar, 2-inch channel bar, Swivelaction Clamp-On, Commonsense Clamp-On, Cadillac Clamp-On, Ford Bolt-On and Ford Clamp-On.

Features—Attractive design; sturdiness of construction; clamping types obviate the necessity of drilling frame; adjustable to width of chassis; concealed springs; will not touch tires.

Prices—$5.50 to $15.

Commonsense Bumpers.

William E. Pratt Mfg. Co., Chicago, Ill.

Features—Instead of relying upon a spiral spring, the support is in the form of an "S" spring; claimed better to withstand shock from any direction.

LAMPS

Arbeco All-Glass Lamps.

Reynolds-Browne Co., Chicago, Ill.

Models—B and C.

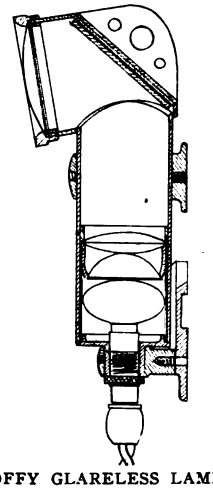
Features—The Arbeco lamp has an inner and an outer shell, both glass, with an air chamber between, acting as a pneumatic cushion; the inner shell is a parabolic, silvered reflector, the silver being on the outside—that is, on the inside of the air chamber between the shells; the enamel of the outer shell also is within the air chamber, thus making it impossible for the finish of the lamp to be scratched off, as is possible with the ordinary way of enameling lamps. The edges of the two cells are set in cement, and an iron bezel—the only piece of metal in the lamp—holds the front glass. The air cushion is claimed to absorb the shocks of vibration and accidental blows. Not only lasting beauty and a neat appearance but efficiency are claimed.

Prices—Model B: 5½-inch side light, $15 per pair; 9-inch head light, $25 per pair. Model C: 6½-inch side light, $18 per pair; 12-inch head light, $40 per pair.

E. & J. Lamps.

Edmunds & Jones Mfg. Co., Detroit, Mich.

Electric head lamp, Model 274, $10; Electric side light; Model 51, $6; Model 52, $5. Electric head lamp; Model 382, $13; Model 374, $10. Electric head lamp; Model 366, $8. Electric side lamp; Model 342, $5.50. Electric side lamp; Model 343, $4.50. Electric tail lamp; Model 21, $3. License holder tail lamp; Model 22, $3.75. Electric dash inset lamps; Model 01, $7.50; Model 02, $7. Gas head lamp; Model 766, $7. Gas head lamp; Model 66, $6. Oil side lamp; Model 6, $7. Oil tail lamp; Model 7, $350. Truck lamp; Model 19, $5.50. Oil side lamp; Model 30, $3. Oil tail lamp; Model 10, $3.25. Electric searchlight; Model 2,740, $17. Electric connectors and plugs. Five per



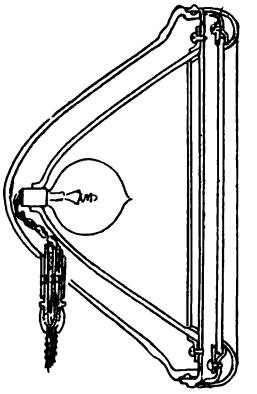
ROFFY GLARELESS LAMP

cent. extra for black enamel and brass; 10 per cent. for black enamel and nickel; 15 per cent. for full nickel.

Gray & Davis Lamps.

Gray & Davis, Amesbury, Mass.

Electric headlights are made in a single type and in four sizes: 9½, 10¼, 11⅜, and



ARBECO GLASS LAMP

12⅜ inches in diameter. On all of the models provision is made for easily shifting the bulb to focus the lamp, a small screw mounted over the reflector and accessible when the door is opened being provided for the purpose. The screw shifts a lever which, in, turn, shifts the bulb forward or back, according to the direction of rotation of the adjusting screw. The prices are $10, $12.50, $15 and $17.50 for the respective models. The electric side lamp is 6⅛ inches in diameter and sells for $6. Decorative limousine lamps, flush dash lamps, tail lights, searchlights, sign lights and a full line of gas and oil lamps are also included in the line; likewise and for the first time a motorcycle lamp.

B. & L. Lamps.

B. & L. Auto Lamp Co., New York City.

New designs which have been added are: Electric headlight, French type body, with octagon front; prices, $9 and $11.50. License tail lamp; $5. Electric tail lamp, torpedo type; $2. Electric spot-light, torpedo type, diamond door; $10. Four motorcycle lamps.

Line includes: Four models of electric headlights, $6.50 to $11.50; four electric side lights, $4 to $5.50; two searchlights, $9.50 to $11; two dash lamps, $2 and $5; four electric tail lamps, $2 to $5; four gas headlights, $5.50 to $22; one gas searchlight, $9.50 to $10.50; seven motorcycle lamps, $3 to $6.50. Company features the harmony of design in its sets of head, side and tail lamps.

Roffy Glareless Headlights.

Roffy-Grace Corporation, New York City.

Models—Two. For attachment to dash or radiator.

Features—A new product. Main body is tubular and vertical; at the bottom is a mushroom-shaped tungsten electric bulb, above which is a condensing lens, above the latter being a double combination projecting lens which throws the light on a French reflecting mirror set at an angle in the top of the lamp; the mirror reflects the light forward and downward through a plano-convex lens; light is cast over a restricted but sufficiently large and well-defined area; light does not strike the eyes of a pedestrian directly, but is sufficiently illuminative.

Solar Lamps.

Badger Brass Mfg. Co., Kenosha, Wis.

For the 1914 season this company is presenting several new styles of lamp, offering original designs. The line includes gas and electric head lamps, gas and electric swiveling searchlights, electric and oil side lamps, electric and oil tail lamps and generators.

Features—Lustre of finish; double ray projection and eclipsing; short focus lead glass lens mirror; quality and attractive design of models and durability. Many lamps are made to special order to harmonize with lines of different cars.

Jaco Lamps, Horns and Mirrors.

J. Alexander Mfg. Co., New York, N. Y.

Electric lamps in a variety of styles and sizes for automobile illumination will be shown, including a new "sign lamp" which is intended to attach to the side bar of the windshield and is so swiveled that it can be directed either up or down or to either side, so that the beam can be utilized for illuminating the road signs. A short handle at the back of the lamp, which is of torpedo shape, serves for turning the device. The Jaco horn is of the "buzzer" type and is claimed to produce a loud tone on a very small current consumption.

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Sol Lamps and Fittings.
Hawthorne Mfg. Co., Bridgeport, Conn.

Old Sol lamps are made in a variety of forms and sizes for both automobile and motorcycle use. For the motorcycles, acetylene generators and a new storage battery lighting outfit also are shown.

Neverout Lamps and Fittings.
Rose Mfg. Co., Philadelphia, Pa.

Neverout lamps are made in all shapes and sizes for use with both oil and electricity. License tag brackets and a radiator heater also will be shown.

SPEEDOMETERS

Elyria-Dean Speedometers.
Dean Electric Co., Elyria, Ohio.

Elyria-Dean speedometers operate on the centrifugal principle, four steel balls which are held in a raceway under an inverted cup tending to fly outward when the shaft is rotated, and in doing so they contact with the curved sides of the cup and it is raised as a consequence. The contour of the cup is such that the cup is raised an equal amount for equal changes in speed of the vehicle, regardless of the fact that the force tending to move the balls increases as the square of the speed. This being the case, the divisions on the dial are equal and the reading of the instrument is facilitated. Also tending toward the same end is the non-reflecting coloring of the dial. The instruments incorporate the usual season and trip odometers, and the resets which facilitate the keeping of records on trips or in touring.

Stewart and Warner Speedometers.
Stewart-Warner Speedometer Corp., Chicago, Ill.

Two new models are included in the Stewart line of automobile speedometers. One model, which enters into combination with clocks and lamps and is provided with either bracket or flush mountings, is known as the B-Z type; is somewhat similar to what was Model C, but with improvements. The improvement includes the fitting of a heavier magnet which opens the way for the employment of a larger dial and the use of larger and more easily read figures and at the same time the elimination of all tendency for the dial to "float." The other new model, which is known as Model G, is entirely new. It is similar to the B-Z model and enters into the same combinations with the clocks and with the lamps, but it is slightly smaller, having a four-inch dial; it sells for $40 plain, whereas the B-Z type sells for $50, when not in combination form.

Also new in the Stewart line is a hub odometer, which is designed to match the hub on the car and which reads to 10,000 miles. The dial is recessed slightly in the hub to guard against accidental breakage. The odometer is put out in practically the same form for use on motor trucks. It sells for $15. A motor boat tachometer and a cream separator "speedometer" also are new to the Stewart line.

The Warner line has been improved slightly by the provision of direct drive odometers on Models 30 and 50; on Model

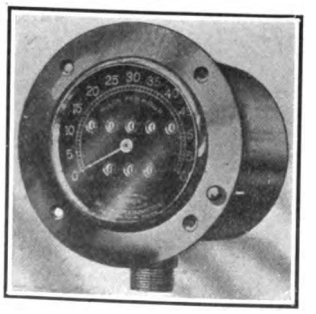


WARNER FLUSH AUTO-METER

30, the new odometer supplants the Veeder mechanism which formerly was used, and its use opens the way for the employment of larger and more legible indicating figures. On the model 50, the direct drive odometer replaces the ratchet driven one which formerly was used. Either of the models can be had in either vertical or horizontal clock combinations combined with either Chelsea or Waltham movements, and either can be had either plain or in combination with the flush mounting.

Corbin-Brown Speedometers.
American Hardware Corp., New Britain, Conn.

Save only for the adoption of a flush mounted type to fill the demand for that sort of an instrument, and the development of a new front drive for the motorcycle speedometer, Corbin-Brown speedometers remain unaltered. For automobile use, they are made in eight models, as heretofore.



CORBIN-BROWN FLUSH TYPE

which combine with clocks to make double that number. Model A has a three-inch dial, reads to 60 miles, and has a season odometer; model B is practically the same but is an inch larger in diameter and has a trip odometer; model C is similar save that a maximum hand is provided; model D is the same but also has an electric light; model E has season and trip odometers and reads to 80 miles; model F is the same as E, save that it mounts a maximum hand; model G mounts both the maximum hand and the electric light; model H reads to 100 miles, has season and trip odometers and electric light. Chelsea clocks are used in all the combinations. The prices range from $25 for model A to $120 for model H; the motorcycle model sells for $15.

Veeder Odometers and Tachometers.
Veeder Mfg. Co., Hartford, Conn.

Besides a more or less complete line of the regular Veeder odometers, liquid tachometers and liquid speedometers, the new Veeder hub odometer will be shown. The instrument is made considerably more compact than the former model and is driven by the revolution of the wheel, the odometer actuating shaft being held stationary by means of a pair of "lazy tongs" which engage with a slot in the axle of the wheel and which are adjustable to fit varying axle lengths. The dials in the instrument revolve on comparatively small shafts or studs, thereby reducing friction and wear to a minimum. The dials are locked so that they cannot be turned save by the proper mechanism, the purpose being accomplished by means of the orthodox Veeder Geneva construction. The device reads up to 100,000 miles. The shaft is made of polished steel and is journaled in bronze or composition bearings and a packing gland prevents the axle grease from working into the recording instrument.

Standard Speedometers.
Standard Thermometer Co., Boston, Mass.

Models—24 automobile and 3 motorcycle speedometers. Automobile models range from 40 to 100 miles in dial readings, with and without clocks. Three- and 4-inch faces. Motorcycle models have 3-inch faces and read from 60 to 80 miles.

Features—Centrifugal principle. Sliding-weight governor; evenly spaced dial; within 2 per cent. of absolute accuracy; driving gear with five-pitch teeth, affording excellent action and wearing qualities; ball bearing ends on flexible shaft; extra wide flanged swivelling surfaces on pivot joints, which, it is claimed, may be run quite loosely without seriously affecting alignment of pivot gears; disk type odometer with extra large figures. Principal change in construction is the use of nickel steel instead of ordinary steel in gears and bearings.

Prices—Range from $25 to $95 for automobile models and from $12 to $16 for motorcycle models.

Hoffecker Speedometers.
Hoffecker Co., Boston, Mass.

Made in a variety of styles and sizes, with either bracket or flush mountings and in either side or vertical combination with clock. The device operates on the centrifugal principle and is novel in that the governor requires no compensating springs. The shocks which would tend to cause the

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hand to "wobble" are absorbed within the instrument itself.

American Taximeters and Instruments.
American Taximeter Co., New York City.

Recordograph—A new instrument; a device which records the movements of a vehicle, including distance traveled, time stopped and started, time of all stops, and speed at all times of day. Designed to permit owners of commercial vehicles to have a record of car movements. Makes record on a tape.

Tail and License Lamp—A new device; consists of a combined tail lamp and license bracket, so arranged that tail lamp also illuminates the license number.

Taximeters—Company also will exhibit its line of taximeters; these are made up for the most part to meet the special requirements of different cities.

Pierce Speed Controller.
Pierce Speed Controller Co., Anderson, Ind.

Pierce speed controllers and Pierce motor controllers are intended to limit the speed of the vehicle and the speed of the motor respectively. In either case a flywheel governor is caused to rotate and the governor acts to close the throttle when the speed reaches the maximum. In one case the governor is driven by the road ball governor is caused to rotate and the while in the other it is connected to the motor and limits its speed. The governor is entirely enclosed and is adjustable.

TIRES AND TUBES

Overman Tires.
Overman Tire Co., New York City.

Types—Cushion and pneumatic cushion tread.

Features—Cushion tire; consists of tire with small opening through center and cuts in tread and sides to permit flow of rubber under road pressure. The Pneumatic Cushion Tread tire is a new product. In this provision is made for the regular sizes of inner tube, but the tread is of unusual thickness, protecting the fabric and giving long tire life. Claimed to be the only tire in which the non-skidding feature is built in and not an added element. Cushion tires guaranteed for 10,000 miles; pneumatic cushion tires for 5,000 miles.

Essex Tubes and Specialties.
Essex Rubber Co., Trenton, N. J.

Essex Red Rubber Tubes—A new product. Made of high-quality rubber and fitted with Schrader valves and caps. Thick walls; 3 and 3½-inch sizes are 3/32-inch thick; 4-inch sizes and larger, ⅛-inch. Price of 34 x 4 size, $6.55.

Essex double blow-out patches, $1 to $2. Essex inside blow-out patch, Style C, 48 cents to $1. Style D, 50 to 70 cents. Style A tire sleeve, 35 to 55 cents. Style B blow-out patch, 40 to 50 cents. Style E, unvulcanized shoe liner, 28, 56 and 70 cents. Laced outer boot, $1 and $1.40. Style H, hook-on boot, $1.50 to $2.50. Style H tire plaster, 12 to 36 cents. Essex Standard Reliner, $3.30 to $7.45. Asbestos metallic gas engine packing, 78 and 80 cents a pound. Pyramid matting, 50 cents a pound. Hose, generator tubing, goggles, asbestos brake lining and rubber spring bumpers.

Prowodnik Tires.
Columb Tyres Import Co., Inc., New York City.

Manufactured by the Russian-French India Rubber, Guttapercha & Telegraph Works, of Riga, Russia. Imported by the exhibitor.

Features—High quality and reasonable price are claimed because of manufacturing facilities in Riga and the material put into the tires. India rubber is used. The Prowodnik is a plain tread; the Prowodnik-Columb is the company's non-skid, which is claimed to be efficient because of the angular "slashes" on the tread. A steel-studded non-skid is made, also.

Prices—34 x 4, Columb, $42.80; 34 x 4, steel studded non-skid, $47.50; 34 x 4 tube, $8.40.

Interlock Inner Tires.
Double-Fabric Tire Co., Auburn, Ind.

Interlock Inner Tires—An inner tire in which overlapping flaps protect the tube from the rim, cause the Interlock to lock at this junction and to be held firmly in place on the rim. Prevents chafing of tube and strengthens the tire walls, thereby giving increased mileage. Prices—28 x 3, $4.50; 42 x 5½, $18.75. For motorcycles, $3.

Besides this product, the Double-Fabric line includes Junior moulded patches, Hook-on outer boots, Lace-on outer boots, Jumbo double-length outer boots, Leader inside blow-out patches, Vulco blow-out patches, reliners and Endless inner shoes.

Cataract Tires.
Cataract Rubber Co., Boston, Mass.

Automobile and truck tires; gray and Invincible red tubes. Carcass is made of plies of combed Sea Island fabric, 17¼ ounces, with a breaking strength of 430 pounds to the square inch; fabric is strengthened with Upriver Para rubber; perfect flux; double breaker strip; wrapped tread; single cure; built by Thropp system; guaranteed for 4,000 miles.

Miller Tires.
Miller Rubber Co., Akron, O.

Plain and non-skid treads; red and gray tubes. One-cure, wrapped tread; best rubber; heavy layers of rubber between the plies of fabric. Non-skid adheres to the road. Tubes made of best quality rubber. Also a full line of tire sundries—reliners, blowout patches, etc.

Thermoid and Nassau Tires.
Thermoid Rubber Co., Trenton, N. J.

Types—Clincher and Dunlop; plain treads. Merit red inner tubes.

Features—The Thermoid De Luxe, the leading brand of this company, is guaranteed for 4,000 miles; comes in plain tread only and is furnished for any standard rim. Nassau tires are guaranteed for 3,500 miles. Merit tubes are made of high-quality red rubber.

Globe Tires.
United & Globe Rubber Mfg. Cos., Trenton, N. J.

The Globe line comprises extra heavy tires and inner tubes which, because of the amount and quality of the materials which enter into their construction, are said to give exceptional service. Also shown by the same maker is a full line of repair stocks, together with a line of Globe brake lining.

Dykes Tire Reliners.
J. L. G. Dykes & Co., Chicago, Ill.

Dykes reliners have been improved and strengthened for the coming season; it is claimed they remain firmly fixed when placed in a tire; they are guaranteed.

Marathon Tires.
Marathon Tire Sales Co. of New York, New York City.

Made of Sea Island fabric; tough tread stock; only new gum and rubber used; red tubes are included in the line; made by hand only; also motorcycle tires.

Braender Tires.
Braender Rubber & Tire Co., Rutherford, N. J.

Braender plain treads; Bull Dog Non-Skid tires; red and gray tubes with patchless valve base; base is reinforced and made integral with tube.

NON-SKID DEVICES

Weed Chain Tire Grips.
Weed Chain Tire Grip Co., New York City.

Dobbins Blow-Out Chains—A new device. Consists of a mesh of cross chains, about four in number, which are anchored at each tire bead to a metal casting; these castings, or bases, are attached at the tire base and a heavy patch is placed over the tube at the point of blow-out; it is claimed that many miles can be obtained with this device before a vulcanized repair is necessary; however, they are intended more as an emergency repair device; easily attached; for clincher and straight-side tires. Prices, including patch—For 3 and 3½-inch tires, $1 each; for 4 and 4½, $1.50 each; for 5, 5½ and 6, $1.75 each.

Lyon Grips—The manufacture of this product was recently taken over by the Weed company; device is designed for use on solid tires; consists of a series of four solid cross bars and side bars which bolt together at the side; surfaces are concaved to afford traction on ice and snow; easily attached; adjustable for wear; cannot cut

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tire. Prices—Single tires, $11 to $26; dual tires, $20 to $40.

Weed Chains—Consist of a side chain encircling the tire at each bead and connected at short intervals by cross chains; creep, therefore, cannot remain in one spot and cut tire; afford traction on all occasions; light weight; neatly and cleanly packed in canvas bags; adjusters are provided, consisting of a spring combination across face of wheel, which holds chains to tread, but not too tightly to prevent creeping. Prices—28 x 2½ to 40 x 6 tires, respectively, $3.50 to $15 per pair. Cross chains, 5 to 18 cents each. Adjusters, $1 and $1.50 per pair. Motorcycle chains, $2.50 to $3. Cross chains, 6 to 10 cents. A line of chains called Rid-O-Skids is provided at a slightly less price; the main difference is that these are not brass-plated, while regular Weeds are brass-covered.

Woodworth Treads.
Leather Tire Goods Co., Niagara Falls, N.Y.

Models—Made to fit all standard tires.

Features—A new "double grip" tread intended for use on ice and snow and provided with sharp studs to provide a gripping surface, and a new motorcycle tire grip which can be attached without removing the wheel from the machine are being featured. The method of attaching the treads to the tires by means of exposed helical springs is new and is said to be distinctive; it facilitates the fitting of the treads and also their removal, yet it is impossible for the wheel to shed the leather covering.

TANKS AND PUMPS

Stewart Pumps.
Stewart-Warner Speedometer Corp., Chicago, Ill.

Stewart air pumps are a new product. They are made in three sizes—a single pump of the diaphragm type, a two-cylinder pump and a four-cylinder pump, all being intended for application to the motor to serve either to compress the air necessary for the operation of an air starter, or for tire inflation. The cylinder pumps have a bore and stroke of 1 7/16 and 1⅛ inches, respectively, and are made for either air or water cooling. The four-cylinder model measures 8 x 4 x 7 inches and the two-cylinder type about half that length. The pistons are provided with tight-fitting ground piston rings which prevent the passage of oil to the air hose and as an extra precaution against air entering the tires, an oil separator is inserted in the air line. Splash lubrication is adhered to and the inlet valves are in the form of ports which are uncovered by the piston on its down stroke. The exhaust valves are in the head, are ground to a perfect fit and held in place with stiff springs. A gauge, ten feet of tubing and a crank for use in case the machine is to be hand driven, accompanies the device. The four-cylinder model sells for $25, the two-cylinder model for $20 and the diaphragm pump, $25.

Brown Pumps.
The Brown Co., Syracuse, N. Y.

Virtue Foot Pump—A new product. Durable and simple; double acting; leather valves, no springs; smooth action; pressure of 200 pounds to the square inch can be exerted with two fingers of one hand; outer cylinder of heavy tubing, making denting unlikely; can be readily disassembled. Price, $3; gauge, $1 extra.

B'Co Spark Plug and Spark Plug Pump—Plug has a core which is removed by a half turn; impulse tire pump is inserted in place of the core. For any four-cycle motor. Price, $15. Plug and connections, $2.

Brown, Jr., Tire Pump—For Ford cars; a new model; screws in in place of regular spark plug; or for $1 over list a B'Co quick detachable plug and connections can be secured. Price, $7.

B'Co Gasolene Vulcanizer—Attaches to tire or tube; weighs 3 pounds; simple in operation. Price, $2.

The impulse tire pump and quick-detachable plug is claimed as an exclusive feature of the Brown line. Company also makes a headlight deflector, priming plugs for Ford cars, and a four-cylinder opposed air pump, which is new.

B. B., Minimax and Universal Pumps.
Herz & Co., New York City.

The B. B. pump is a double cylinder air-cooled compressor designed to attach to the motor for use in connection with an air-starting system or for pumping up the tires. Its speed is 375 revolutions a minute and it will store air under any pressure up to 200 pounds a square inch, a safety valve being provided which can be regulated to open at the required pressure. The pump is splash lubricated and can be belt or chain driven, according to conditions. The Universal pump is a single cylinder friction tire pump, which is brought into play by causing its frictiton wheel to contact with the flywheel of the motor when the latter is in operation. The Minimax pump is a portable garage inflation set comprising an electrically driven compressor mounted with the requisite gauges in a hand shop wagon. The tank is provided with a safety valve and an automatic cut-out serves to stop the electric motor when the pressure in the tank attains the desired point. Suitable tubing is provided with the outfit.

Abell Tire Pumps.
Standard Thermometer Co., Boston, Mass.

Models—One attachable to engine and one portable for garage use.

Features—Both pumps have three cylinders. Ball bearing drive; emulsified oil does not become mixed with the air which is pumped into the tire. Close piston fit. Can be run at 500 revolutions per minute and at this speed will pump a 34 x 4 tire to 75 pounds in 60 seconds. The garage pump mechanism is the same as that of the engine pump, but is operated by a ¼-horsepower electric motor from a lamp socket. Will inflate a 34 x 4 tire to 80 pounds in two minutes. For both are claimed lightness, compactness, durability and efficiency. Both are water-cooled.

Prices—Engine pumps with hose and gauge, $25 and $30. Garage pump, $100.

Imperial Pumps and Specialties.
Imperial Brass Mfg. Co., Chicago, Ill.

Imperial Air Pumps—2 D, brass barrel, 5 x 1¼ inches; round handle; price $4. 3 D, same as 2 D, except 8 x 1½ inches; price, $5. 4 D, same, except 10 x 1½ inches; price, $5. 8 D, same as 3 D, except tee handle; price, $5. 9 D, brass barrel, 5 x 1½ inches, three-way cock; price, $6. Imperial-Wixon hand pumps; $5, $6 and $8.50.

Imperial Oil Pumps—1 D, glass barrel, 4 x 1½; $6.50. 5 D, celluloid barrel, 13/16 x 3½; round handle; $5. 7 D, brass barrel, 8 x 1½; $5.

Line of priming cups, copper tubing, gasolene cocks, gasolene shut-off cocks, needle valves, solderless couplings, solder connections, flared tube unions, compression couplings, pipe fittings, hood fasteners, gasolene strainers, grease cups and accelerator pedals.

Master Tire Pumps.
Hartford Machine Screw Co., Hartford, Conn.

Models—Two; single and double cylinder.

Features—The pump is a single-stage, air-cooled, fully enclosed unit and is distinguished by the fact that the pistons are devoid of piston rings. The advantage claimed for this construction is that the oil—the pump is splash lubricated—cannot work past the piston and pass with the air into the tire. The two-cylinder model, it is claimed, will inflate a 37 x 5-inch tire to 100 pounds pressure in 2½ minutes, while the smaller model will inflate a 34 x 4-inch tire to 85 pounds in three minutes, the revolutions per minute in each case being 600.

American Fuel Pumps and Tanks.
American Tank & Pump Co., Cincinnati, O.

Models—Measuring pumps are made in six styles, two of which are for curb dispensing. Ordinary pumps and underground tanks are made in a variety of sizes and styles to suit individual needs. A portable 50-gallon tank mounting a measuring pump also is made.

Features—The feature of the line is a new double-acting pump providing a continuous flow of the liquid and on which all of the valves are readily accessable. The pump measures the liquid as it is transferred and is adaptable for either long or short distance work. The double acting feature is said to be new and exclusive to American products.

Bowser Pumps and Tanks.
S. F. Bowser & Co., Ft. Wayne, Ind.

Types—Sidewalk, garage and portable.

Features—The Red Sentry sidewalk pump which was placed on the market a

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year ago has a new electric lighting attachment which lights up a "Gasolene" sign and also throws light down upon the pump, making plain its readings and operations at night. Another new product is a five-gallon plunger pump with intermediate stops and a quick return feature; meter reads up to 100,000 gallons. Pumps are built of heavy metal, are neat and graceful in design and occupy a minimum of space. They are trimmed in black and red and nickel. A one-gallon, quick-return pump is also new. The remainder of the line includes a variety of fixed and portable pumps and oil and gasolene storage systems.

Wayne Pumps.
Wayne Oil Tank & Pump Co., Fort Wayne, Ind.

Models—Portable gasolene pumps and stationary pumps for interior and sidewalk use. Oil and gasolene storage systems.

Features—Quality and up-to-dateness is featured. Accuracy of gasolene measuring pumps is emphasized; one sidewalk model is painted red and is surmounted by an electric lamp and globe, a sign on the globe reading "Filtered Gasolene." The Wayne Oil Storage System protects the oils from dirt and dust and provides a means for the easy handling of barrels. A pump for each demand of the garage will be exhibited.

Mayo Tire Pumps.
Mayo Mfg. Co., Chicago, Ill.

"Skinner" tire pumps and Mayo impulse pumps. The latter are intended to be inserted in the spark plug opening, the free piston in the pump operating in accordance with the pressure in the motor cylinder, compressing pure air into the tires.

TIRE SUNDRIES

Newmastic Tires and Newmastic Rims.
Newmastic Co., New York City.

Newmastic is a composition for filling the inner tube of a tire, which is said to be extremely resilient, and to be unaffected by temperature changes or moisture. It is injected into the tire which, once treated, needs no further care until it is worn out. No-felloe rims are made with a demountable felloe which also mounts the rim. In case of tire trouble, the whole wheel felloe is detachable from the spokes with a minimum of labor and another felloe bearing a perfect tire attached in its place.

Tire Repair Materials.
Charles O. Tingley & Co., Rahway, N. J.

Blow-out patches, vulcanizing fluids, Gum gum, valve bases, Gum Gum and vulcanizing fluid sets, tire solder sets, concentrated cement, red rubber gas tubing, lamp connectors, soapstone, iron work varnish, rubber rougheners, top dressing, waste, tire tape, rim shellac, rim cement, tire plugs, Diamond aluminum and Special rubber cement.

Tire Repair Materials.
Paul G. Niehoff & Co., Chicago, Ill.

Century reliners; Nemo hard rubber air-drying enamel, gloss black and dead black; Nemo enamel leather dressing; Nemo radiator cement; Nemo mohair top waterproofing; Nemo tire life.

Narco Tire Repair Materials.
National Rubber Co., St. Louis, Mo.

The National line includes cement, tire cut fillers, rubber reviver and rubber refinisher; is marketed in small cans for the use of the individual car owner.

Shaler Vulcanizers.
C. A. Shaler Co., Waupun, Wis.

Electrick vulcanizers, which operate on electricity, and various other steam vulcanizers, both portable and for garage use, in many models and sizes.

Edelman Gauges and Fittings.
E. Edelmann & Co., Chicago, Ill.

Tire and gasolene gauges, priming cups, grease cups, gasolene tank couplers and reducers, radiator drain cocks, relief cocks, screwdrivers and hydrometers in several models and sizes.

Ideal Sleeves and Casings.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

Ideal sleeves and casings for prolonging the life of tires; made of standardized, high-grade material.

Schrader Tire Valves.
A. Schrader's Son, Inc., New York City.

Schrader tire valves are made in a variety of styles, both plain and incorporating Twitchell pressure gauges.

United States Gauges.
United States Gauge Co., New York City.

Invincible tire testers; gasolene, oil and pressure gauges; tire pump gauges; compressometers; sight feed oil gauges.

Tire Repair Materials.
Hall-Thompson Co., Hartford, Conn.

Tire cement, tire paint, patches, etc. Polishes, soaps and similar materials.

OILS AND POLISHES

Dixon's Graphite Lubricants.
Joseph Dixon Crucible Co., Jersey City, N.J.

A special lubricant for each use. A flake graphite. High price and high quality are featured. Product includes: Motor Graphite, for general lubrication; in ½-, 1- and 5-pound tins. No. 677, for transmissions and differentials; in 1-, 5- and 10-pound tins. No. 676, for parts of great heat; in 1-, 5- and 10-pound tins. Graphite Cup Grease, No. 3 and No. 5, for bearings; in 1-, 5- and 10-pound tins. Graphite Wood Fibre Grease, for noisy gears; in 1-, 5- and 10-pound tins. Graphitoleo, for packing bearings and housings; in 1-, 5- and 10-pound tins and 8- ounce tubes. Graphite Motor Chain Compound; 3-pound cakes. Chain Graphite, No. 678; in bars, 2 x 8 inches. Graphite Pipe-Joint Compound; in 4-ounce tubes and 1- and 5-pound tins.

Gargoyle Mobiloils and Greases.
Vacuum Oil Co., New York City.

Vacuum products include a line of lubricants for every make of car, the Vacuum company recommending a specific lubricant for each individual case.

Features—Quality and efficiency are claimed, the result of long experimentation. The line includes: Gargoyle Mobiloils, A, B and E, for cylinders; price, 55 cents to 80 cents per gallon, according to quantity. Mobiloil C, for transmissions and differentials; 35 to 60 cents. Mobiloil D, for steam automobiles: 65 to 90 cents. Mobiloil Zeta, Light, Medium and Heavy; medium priced products; 40 to 70 cents. Mobilubricant, Motogrease and Autosponge; for use in transmission, differential and other gears.

Acheson Graphites and Lubricants.
International Acheson Graphite Co., Niagara Falls, N. Y.

Graphcoat—A graphite mixed with a quick-drying, fluid carrier for use on rims and springs; applied with a brush; prevents sticking after parts have been in contact for long lengths of time; requires no painted surface as ground work; will not cake, gum or attract or hold dirt; not affected by temperature. May also be used on bolt threads, pipe joints, etc.

Oildag—Claimed to be the only lubricant containing deflocculated graphite suspended in oil.

Gredag—Claimed to be the only grease containing pure Acheson Graphite.

Tulc.
Universal Lubricating Co., Cleveland, O.

A petroleum lubricant; made in seven grades; for use wherever a heavy consistency lubricant is required; will work satisfactorily at 340 degrees Fahrenheit or 40 degrees below zero; is economical; contains no acid and no filler; will not harden; leaves no residue or gummy substance; its low moisture makes it a rust preventive.

Polishing Cloths.
Gem Supply Co., Waterbury, Conn.

Features—Consists of a chemically treated cloth for dusting and polishing automobile bodies and other similar surfaces; chemical treatment has been improved; claimed to be the only cloth which will adapt itself so satisfactorily to a wide range of uses.

Harris Lubricants and Body Soap.
A. W. Harris Oil Co., Providence, R. I.

Harris motor cylinder oils are made in three consistencies—light, medium and heavy; Transcompound, a lubricant for gearsets and differentials, which is said to be an oil reduced to the consistency of grease and not grease, is made in a single

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weight. All of the lubricants are refined from the best grade of Pennsylvania crude oil and are not acid treated. The body soap, which is free from alkali or other substances injurious to the paintwork, is a new addition to the Harris line.

Frazer Lubricants.
Frazer Lubricator Co., Chicago, Ill.

All kinds of lubricants for motor car use; company features the fact that its business dates back to the early part of the last century, when it had its inception in a small axle grease industry. Quality of products is a claim.

U-Kan-Plate Silver Polish.
A. R. Justice Co., Philadelphia, Pa.

U-Kan-Plate is a polish which may be applied to brass, copper or German silver surfaces, and when rubbed down will give a silver-like finish. Is especially convenient for refinishing old parts.

Havoline Oils.
Havoline Oil Co., New York City.

These oils are made in various grades and with various characteristics to suit different motor and other conditions.

Features—Non-carbonizing and does not harden or gum up.

Non-Fluid Oils.
New York & New Jersey Lubricant Co., New York City.

"K-000" oil for grease cups, differentials, universal joints, etc. "K-00" oil, a special grade for use in transmissions.

Albany and Cook's Lubricants.
Adam Cook's Sons, New York City.

Line includes Albany grease, Albany oils and Cook's lubricants. Albany oils are being put out for the 1914 season in a new package.

Panhard Oils and Greases.
George A. Haws, New York City.

Panhard cylinder oils, gear lubricants and greases.

Features—Will not carbonize or congeal.

Baum's Automobile Body Soaps.
Baum's Castorine Co., Rome, N. Y.

Product is a soap for washing automobile bodies; claimed to be neutral; will not injure paint or varnish; produces good lather and makes cleaning easy.

Mobo Auto Cleanser.
John T. Stanley, New York City.

Mobo is a cleansing material for use on automobile bodies; especially effective in removing grease and dirt. The line also includes other soaps and polishes.

Oilzum Lubricants.
White & Bagley Co., Worcester, Mass.

Oilzum products include several grades of cylinder oils; transmission lubricants; fibrous lubricants; cup lubricants; gear lubricants; oil soaps.

Amalie Lubricants.
L. Sonneborn Sons, New York City.

Amalie lubricants include oils, greases and soaps; a product is produced for practically every automobile use.

Blue Ribbon Metal Polishes.
International Metal Polish Co., Indianapolis, Ind.

Polishes for all finished metal surfaces.

Soaps and Polishes.
J. Eavenson Sons Inc., Camden, N. J.

Soaps and polishes for use on cars and in garages.

MANUFACTURERS' DISTRIBUTERS

H. W. Johns-Manville Co., New York City.

J-M Mobilite—Manufactured by the company, which makes some of the products it distributes. Mobilites are a new product and consist of a hard rubber dash or tail lamp, claimed to give efficient service on dry cells; hard and durable; not likely to dent; do not require polishing; powerful reflectors and lenses intensify light; concealed switch; three types, for insetting in dash, for tail light and a portable type attachable to dash connections. Six No. 6 dry cells will run four lamps intermittently from 80 to 120 hours.

J-M Non-Burn brake lining, J-M Permanite packing, and J-M Mobilene packing for gas engines; J-M Mogul packing for valve stems and piston rods; J-M Asbestos yarn, J-M asbestos fire felt, J-M Leak-No, J-M asbestos motor cement, **J-M dry powder and Fyro fire extinguishers**, J-M Success fire extinguishers for garages, J-M dry batteries, J-M ammeter, J-M Noark fuses, friction tapes, rubber tubing and metal polish are other manufactured products.

Jones Speedometers—Made by the Jones Speedometer, New Rochelle, N. Y.; operates on the gyroscope or mechanical principle; simple; has few parts; accurate in every temperature; steady hand; immovable dial and large speed figures; accurate at all speeds. Made with and without clocks. Prices—$60, $75, $100 and $125.

Mezger Soot-Proof Spark Plugs—Made by C. A. Mezger, Inc., New York City. Double chamber which gives a large area of carbon surface inside and outside the porcelain, making a path of resistance several times greater than that in other types of plug; current must take path of least resistance, the air gap; small diameter of the porcelain chamber radiates heat so rapidly that carbon is burned as fast as it is formed; cannot short circuit, leak, collect soot or clog under any condition of speed, temperature, oiling or pressure.

Carter Carburetters—Made by the Carter Carburetter Co., St. Louis, Mo. The chief peculiarity of the Carter carburetter is that instead of the ordinary type of one-orifice jet it has a vertical tube in which are drilled a large number of extremely small holes. The suction of the engine draws the gasolene up in the tube and it is sprayed through the holes in quantities in proportion, of course, to the level in the tube. As the holes are arranged spirally each gets a separate air supply. The float is a hollow sphere and the valve lever is under it and is operated only by the weight of the float, there being no attachment.

Long Horns—Made by G. Piel & Co., New York City. A hand operated warning signal; notched hand push rod engages gear and causes another gear to strike a button on a diaphragm. Models S, J-S and J-M. Prices—$10 to $19.

Arnold Electric Vaporizers and Arnold Electric Heating Plugs—Made by Arnold Electric Co., Boston, Mass. Vaporizer consists of a hollow electric heating coil connected to the carburetter intake. Heating plugs are designed to be set in the "gas" manifold and connected with a battery and special resistance coil which develops a high degree of heat in a short time; permits starting in cold weather.

Spark-No Car Locks—Made by Swyers & Lorch Mfg. Co., Pittsburgh, Pa. A device which attaches to the dash and resembles a clock; it contains an ignition lock which sets with a combination, the combination being worked by moving the hand of the clock, as a safe knob is worked; a thief desiring to steal a car so equipped would be unable to start it because of the lock and would be unlikely to recognize the clock as the lock and would be unable to work the combination if he did recognize it. A motorcycle model is made.

Asch & Co., New York City.

Halladay Bumpers—Three models: Imperial, Universal and one for Ford cars. Features—Attachment quickly effected and without drilling the car frame. Helical springs enclosed in telescoping tubes. Prices—$10 to $20.

Hoover Shock Absorbers—Three models: one for Ford cars. Features—Device consists of a rebound strap and a spring, the strap caring for the lesser shocks and the spring for the greater road inequalities. The spring formerly was located midway between the axle and the car, but a new model has been brought out wherein the spring is positioned at the top. Prices—$10 per pair.

De Luxe Grease Cups—Models Nos. 101 and 105. Features—Plunger screw does not travel in and out of the grease chamber, but is fixed, the leather plunger working up and down on the threaded plunger screw. Finished in brass or nickel. Prices—15 to 40 cents.

Presto Inspection Lamps and Cigar Lighters—Lamps and lighters are made separately or in combination. Holders are provided. Prices—$2 to $3.50.

Anchor Edi-Swan Type Connectors and Lamp Sockets—An assortment ranging in price from 20 to 50 cents; also, extensions ranging from 90 cents to $1.35.

Edelman Gauges—Tire, oil and compres-

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sion. Features—Tire gauges are designed for use at valve or in hose line. A red hand is a feature, remaining stationary until reset. The Reliable Gauge is a new model in watch form; smaller than a watch; reads to 120 pounds and is guaranteed correct within 2 per cent. Prices—Reliable, $1; others, $1 to $4.

Hoover Rim Removers—For Q. D. and clincher rims. Claimed to be capable of use even when it is so dark operator cannot see the tool; simple in operation. Price—$2.50.

Hoover Leather Specialties—Mud hook, consisting of a traction plate strapped to the tire and felloe; price, $1.50. Bow rests; 70 cents to $2 a pair. Front and hold-down straps. Rebound straps. Speedometer coil protectors. Crank holders. Door stops. Trunk straps. Hat racks. Roll-up straps.

Meiner Emergency Wheel—Designed to take the place of a wheel which is incapacitated. Consists of a 15-inch wheel, set in a fork, above which are arms which bolt to the under side of the spring of a car. Bearings are babbitted and the whole device is of cast steel. Weighs 50 pounds and is designed to carry a maximum of 50,000 pounds. Price—$25.

Ralph Waldt, New York City.

Healy valve reseating tools, Healy valve spring removers, Koeth's interchangeable tools, Weaver jacks, Motorists' warm grips, Ray socket wrenches, Peerless heaters, Hi-Po battery connectors.

Healy Valve Seaters—Will face up both the valve surface and the seat of any valve between 1¼ and 2½ inches. The valve head dresser will taper the bearing surface either at 45 degrees or 60 degrees, at the option of the user. Both are hand-operated and do the work accurately and in a minimum of time.

Healy Valve Spring Tool—Comprises but two pieces, and is very light and easily carried in the pocket. In use it simply is necessary to make the motor cam compress the spring, then set the tool in place. When the cam is released, the tool holds the spring compressed so that the pin and washer are easily removed.

Koeth's Interchangeable Tools—Comprise a pair of screw jacks mounted on a triangular frame on castors, both jacks being operated with a single crank provided with a universal joint for freedom of movement. The jack comprises at once a lifting jack, a turn table, skids and tire rest.

Ray Socket Wrenches—Comprise a handle with a universal joint which permits of its use in tight places and a complete set of interchangeable sockets, together with a large and a small screwdriver bit, 1 long and 2 short extension bars and a spark plug socket. The set comes packed either in a wooden case or in a tool roll.

Motorists Warm Grips—Comprise a pair of leather grips intended to lace onto the steering wheel and which are provided with suitable resistance coils and leads to the battery and a dash switch for making or breaking the circuit.

Peerless Heater—Is a hot water heater, comprising a housed coil radiator which is piped to the cooling system of the car so that the warm water from the motor enters the radiator and gives up its heat. The heater is very easily installed and is said to operate perfectly without in any way interfering with the cooling of the motor.

Hi-Po Battery Connectors—Are provided with spring clips intended to prevent the terminal nuts from working loose under the vibration.

Schaefer Sales Corporation, Detroit, Mich.

The-Tel-Tale Gasolene Gauge — A new device. Consists of a registering hand and dial on a metal part which screws into the filler hole of a gasolene tank; the metal part contains a filler hole and cap so that the gauge may always be left in place; from the metal part a twisted flat strip of metal extends to the bottom of the tank, also a round metal wire. A float, containing a rectangular hole which fits the twisted rod, is attached by a slotted projection to the round wire so that the float cannot turn. As the float rises and falls it causes the twisted rod to turn and this actuates the hand upon the dial. Is manufactured for all cars that include as standard equipment a round, oval or square gasolene tank without an offset and which is made in any considerable quantity. Price, $2.50.

Kumalong—A new device. For the purpose of attaching chain grips to tires in case of muddy roads or other conditions which render it undesirable to get out in the road or mud to put on chains; attaches to the wheel; a cross chain is hooked to the Kumalong and the car pushed or run forward until the chains are in position to hook together. Price, 50 cents a pair.

Smalley Daniels, Detroit, Mich.

Sly perfect pressed steel tire holders, including a new double holder for Ford cars, which attaches to the back and combines a license tag holder and lamp bracket; Mitchell tool boxes, the feature of which is the presence of very short legs which serve to keep the bottom from the floor, the air space thus formed preventing the formation of rust; New Era replacement springs, for replacing broken springs on very many makes of automobiles and a new collapsible bucket, water and gasolene funnel combination which makes a package but a half-inch in thickness when folded and can easily be carried under the seat cushion.

Herbert F. L. Funke Co., Inc., New York

Coventry Silent Chains—For automobiles and motorcycles; a new type has been designed for use on camshafts, magnetos, pumps and auxiliary drives on engines; also a new chain exclusively for use in transmission boxes.

White & Poppe Carburetters—For automobiles; an improved type has been added.

Brown & Barlow Carburetters—For motorcycles.

Charles E. Miller, New York City.

Excel Auto Jack—A new device. Will go under anything from 5 to 20 inches high and lift 4 inches in 2 seconds; one downward motion of lever; for cars up to 8,000 pounds; weight 50 pounds crated; of low carbon steel with casehardened pins. Price, $16.

M & M Controller and Economizer—Attaches to the manifold and regulates mixture properly; operated from the seat. Price, $10.

Line also includes for the first time a tail lamp bracket and license carrier; Ford windshield ventilator; Romort engine cleaner; Romort automatic air valve and the Dead Easy tire pump. Company handles large line of other materials and supplies.

Stewart & Co., New York City.

Ahco Ford Exhaust Whistles—A new device; made by the Arnold-Hough Co., of Providence, R. I. Consists of a square brass whistle which attaches to the rear end of the exhaust pipe; made in one- and two-tone models. Flexible valve removers and Russell valve grinders, made by the same company.

Allen-Friction Wrenches — Also socket wrench sets; made by the Allen Wrench & Tool Co., of Providence, R. I. Consists of a wrench which is made tight as it is turned.

Gryndyn—A valve grinding compound made by Stevens & Co., which also manufactures the Owen valve grinder.

Stevens & Co. New York City.

Bryant Valve Lifters—Fits any car and spring; does not slip; holds spring while valve is being ground; operates between the coils of the spring, releasing all pressure from the valve stem and leaving the valve, spring, disk and key free to be removed; spring can be compressed out of the motor, replaced and released.

Pioneer Grease Gun, Victor Gaskets, spark plugs, horns and reeds, air pumps, pump connections, burners, tubing, nipples, cocks, switches, tools and other articles are included in the Stevens line.

J. H. Faw, New York City.

Red Seal priming plugs, Red Seal closed-end plugs, Ford short valve grinders, Improved oil adapters and Ford lighting sets are to be shown this year, in addition to the line of other automobile accessories and supplies distributed by Faw; line includes shim stock, piston rings, motor parts, etc.

Peter A. Frasse & Co., New York City.

Shelby seamless steel tubes; American distributer of Poldi tool steels; maker of Hildreth's folding steel horses or trestles; machinery, supplies, tools and factory wipes.

Donnelly Motor Equipment Co., New York City.

National tire pumps, National vulcanizers, Gladrag polishers, body soaps, and "steersman" attachments for steadying steering.

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PORTABLE GARAGES

Taylor Sectional Steel Garages.
Taylor Mfg. Co., Montclair, N. J.

Sizes—10 x 12 feet to 20 x 42 feet.

Features—Complete garage includes two windows in each side, four front doors with window in each, two Sunburst gable ventilators, 12 corner shelves, chain bolts, night latch, etc. Company did not exhibit last year. Ease of assembly and durability of structure are features claimed. For 1914 the window movement, the ventilating systeh, the window guards and the double and single combination front doors have been improved. The distinguishing features are: Ventilated ridge, keeping garage cool in hot sun; windows raise by window springs on the side, effecting a space economy over the swinging window; window guards on the outside; combination doors, permitting entrance for a man without opening doors the full width; shelves; interlocking system for steel sections; no frame; can be put up by one man in 10 hours. Design and most of the features patented.

Prices—$166 to $720.

Pruden Portable Garages.
Metal Shelter Co., St. Paul, Minn.

A line of portable garages constructed of sheet metal; can be easily erected and can be easily taken down and moved.

Portable Garages.
J. R. Ashley Co., New York City.

Light garages made of sheet metal; designed to be easily erected and taken down.

CLOCKS, ETC.

Standard Thermometers.
Standard Thermometer Co., Boston, Mass.

Features—Is a development of the line of this type which the company has manufactured for 30 years but has only now been adapted for automobile use. The meter registers by a needle and dial, reading up to 400 degrees Fahr. The device is attached to a car by means of a ⅞-inch hole bored in the radiator cap, the thermometer having a lamina which extends on down into the radiator but not to the tubes. The casing of the lamina is screw-threaded and the thermometer is held in position by a check nut.

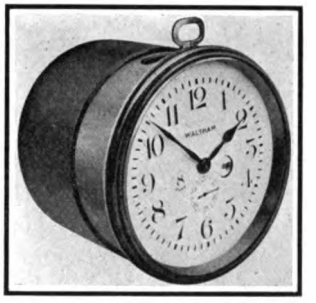
Price—$5.

Waltham Clocks.
Waltham Watch Co., Waltham, Mass.

Models—B, D, O, S, W, M, N and a limousine set.

Features—Double main spring in the 8-day movements installed in automobile timepieces; this avoids a "drop," one spring stepping in and taking up the load when one approaches a run-down condition. Will run eleven days. Only automobile timepiece adjusted to temperature. Winding indicator which signals three days in advance on the running down of the clock. Models are designed especially for automobiles. Quality, reliability, accuracy and up-to-dateness are claimed as general features.

Model W is a new model; the bezel sets on a sleeve which telescopes into the clock



WALTHAM TELESCOPING CLOCK

casing and locks with a bayonet lock by turning the bezel. The winding and setting keys drop down out of sight and when locked the clock presents a flush surface. Model M's feature is that it attaches to the dash by means of two flanges.

An additional feature is a photographic method of producing dials; this gives a white figure without an underlying black base, which is likely to weaken the strength of the white.



WALTHAM "FLUSH MOUNT" TYPE

Motometers.
The Motometer Co., New York City.

Two new models of the Boyce Motometer have made their appearance since the last New York show. The Junior model, which is intended for use on small cars, operates on exactly the same principle as the heavy car type, but is of simpler design and is smaller in size. The dial is marked so that the driver is informed when the motor is operating at the highest efficiency, when the heat approaches the danger point and when the motor is too cold. The second new model is just the same as the Junior save that a special cap for use in connection with Ford cars is fitted. The price of the largest model is $10; the Junior model, $5, and the Ford model, $5.50.

CAR COMPONENTS

Schwarz Wheels.
Schwarz Wheel Co., Philadelphia, Pa.

Wood wheels and wheel spiders.

Features—Mortised and tenoned construction at hub which interlocks spokes; this construction is patented. Tight assembly which cannot loosen. For 1914 the company has added heavy truck wheels with spoke shoulders shaped by special process to exact arc of felloe, making a perfect bearing on entire spoke. Work is done on new machinery of company's own design.

Wheel spiders, a new product, consist of a set of spokes with the hub ends interlocked but without hub or rim attached. The mortised and tenoned feature causes them not to fall apart. These spiders are designed for repair work, and can be used by manufacturers in building new wheels.

Dunlop Wire Wheels.
Dunlop Wire Wheel Corporation of America, New York City.

Types—Detachable; to take clincher, Q. D. or straight-side tires. Non-detachable Ford model, interchangeable with Ford artillery wheels.

Features—This wheel is a counterpart of the English Dunlop wheel, the American rights to which recently were secured by the American Dunlop company. Principal feature is the ease and quickness with which the wheel can be detached; no loose parts; dust-proof locking device, devoid of ratchets, pawls and delicate springs; quadruple lacing; pressed steel wheel shell; spoke seat holes countersunk on the inside, giving rigid seating; no back lash; attractive appearance.

Stanweld Rims.
Standard Welding Co., Cleveland, O.

Model 60—a new, demountable, quick-detachable type. Differs from previous Stanweld rims principally in that the side flanges and the locking wedge ring are continuous and the inner band is split transversely; this permits the inner band to be removed without disturbing the side flanges; if flanges are "set" on the tire the inner tube can be removed without disturbing them; rim is slightly heavier but much stronger than ordinary rim. Company also makes other rims which have not the collapsible inner band construction.

The line of products also includes tubing for various purposes and other metal construction.

Houk Wire Wheels.
Houk Mfg. Co., New York City.

Manufactured under the English Rudge-Whitworth patents covering triple-spoke lacing and a positive automatic locking device; triple lacing affords resistance to side thrusts and gives greater carrying strength; the locking device, which is one

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of the important constructional features, consists of a ring lock nut which is threaded internally to engage the fixed hub; the ring nut also is tapered to clamp the hub shell of the demountable portion; the whole wire wheel is easily removed by removing the nut and is as easily locked in place. Ease on tires and the whole car is claimed; also greater strength and safety.

Warner Gears and Axles.
Warner Gear Co., Muncie, Ind.

A new multiple-disk, dry-plate clutch has been brought out; has Raybestos-faced disks of large diameter; adaptable to unit power plants with rear axle or midship transmission; the clutch housing is bolted to the motor housing; extra heavy double-coil springs; drive is taken on hardened steel studs and hardened keys; all bearings of ball type; arrangement has been made for clutch braking and pedal adjustment. Assembly neat, light and compact.

T-38 transmission, a new product; a unit type assembly with three forward speeds and a reverse; designed for light "four" or "six." Case is aluminum; gears 6-8 pitch and ¾-inch face; main drive and sliding gears on annular bearings; countershafts on Hyatt bearings; gears and shafts of heat-treated steel. Clutch of dry-plate, multiple-disk type; clutch brake provided. Pressed steel cone clutch will be furnished with certain quantities.

Lanchester-Daimler worm gear for electric vehicles is a new product. The company's line includes a variety of other similar products.

Presto Demountable Rims.
Presto Inter-Rim Co., Boston, Mass.

Models—Made in all standard sizes and will fit straight-side, clincher or solid tires.

Features—Demounted without the use of tools. Operates by a locking device which, by the pull of a lever, causes a locking ring to contract, giving passage to the tire-carrying section. Impossible for the tire to creep. Rim is self-centering Rims will be shown for the first time on wire wheels.

Ideal Resilient Wheels.
Ideal Steel Wheel Co., Cincinnati, O.

A steel wheel of resilient construction; makes the use of airless tires possible without the sacrifice of easy riding; claimed to increase the life of the motor and car and to add to the mileage per gallon of fuel or charge of electricity.

E-Z Rims.
E-Z Rim Co., Boston, Mass.

Rims, a feature of which is their quick demountability; a special rim for Ford cars is manufactured.

Internal Gear Drive Truck Axles.
Torbensen Gear & Axle Co., Newark, N. J.

Types—R. 1,500 pounds capacity; R-1, 1 ton; S. 1½ tons; S-1, 2 tons; special axle for 1,500-pound electrics.

Features—I-beam construction; one solid member for carrying the load and a separate one for transmitting the power to the wheel; carrying member of drop forged steel; wheels on tapered roller bearings; all driving mechanism enclosed, affording cleanliness, quiet working and efficient lubrication; solid one-piece I-beam forging; compact internal gear drive. All gears and other parts of best quality material. Large range of gear ratios offered.

Cotta Transmissions.
Cotta Transmission Co., Rockford, Ill.

Gearsets for either shaft or chain drive; three forward speeds; gears always in mesh, the changes being made by shifting dog clutches. Made in various sizes to transmit from 15 to 130 horsepower. The features are the all-around substantial construction, the use of the best of materials and the adaptability of the device for either right, left or center control. The prices vary from $180 to $265 for the shaft drive devices and from $180 to $625 for the chain drive assemblies, which include the differential and suitable housing.

Brown-Lipe Gears.
Brown-Lipe Gear Co. and Brown-Lipe-Chapin Co., Syracuse, N. Y.

Brown-Lipe Gear Co.—Four-speed, unit power plant transmision is a new product; is equipped with a new type of socket center control for left-hand drive; built in two sizes for pleasure vehicles and has direct drive on either third or fourth speed; built in both sizes for subframe construction. Will also show three-speed transmissions.

Brown-Lipe-Chapin Co.—Will show differentials and bevel drive gear sets, including types of differentials for worm gears.

Warner Gears.
Warner Mfg. Co., Toledo, O.

Three and four-speed selectively operated gearsets which are adaptable for either right, left or center control; unit power plant combinations; steering gears; differentials, clutches, motors and electric starters.

Cleveland Worms and Gears.
Cleveland Worm & Gear Co., Cleveland, O.

Accuracy in cutting of worms and gears are features; company will exhibit two worms and gears which have been run, respectively, 50,448 and 50,000 miles.

Hess Axles.
Hess Spring & Axle Co., Cincinnati, O.

New products are a double internal expanding brake, external and internal brakes and new adjustments on the differential, both sides and on the pinion shaft bearings.

SRO Ball Bearings.
Marburg Bros., Inc., New York City.

Three new series of combination radial and thrust SRO ball bearings are embraced in the Marburg offering. As is the case with the single and double row bearings and the self-aligning bearings, which are not new to the SRO line, the newer series employ an electrically riveted ball retaining cage to guide the balls at their axis of rotation, and it is said that the arrangement practically eliminates friction of the balls at the point of contact with the retainer. Thrust bearings also are included in the line.

Marburg-Hagen springs are made to manufacturers' specifications from exceptionally high grade special steel having an elastic limit of at least 190,000 pounds to the square inch. They are imported from Germany.

U. S. Ball Bearings.
U. S. Ball Bearing Mfg. Co., Oak Park, Ill.

Types—Radial and thrust.

Features—Outer and inner race rings of imported ball bearing steel, specially heat-treated; equipped with Hoffman balls; retainers allow large number of balls; withstand great strain; smooth running; great accuracy; a new retainer is being brought out and will be exhibited for the first time at the Chicago show.

Automobile Brand Gears and Bearings.
Light Mfg. & Foundry Co., Pottstown, Pa.

A complete line of three- and four-speed transmissions has been added to the company's products, as has a patented bronze back, double locked bearing, which is made on entirely new lines. Products also include aluminum, manganese bronze and bearing metals and castings and a complete assortment of die-cast finished parts and motor bearings.

Bock Bearings.
Bock Bearing Co., Toledo, O.

Types—Roller; radial and thrust.

Features—A tapered roller, the dimensions of which have been scientifically determined; will revolve with minimum of friction; roller shouldered at base end only; ability to carry heavy loads. Company but recently entered the field.

Rhineland and Fanfir Bearings.
Rhineland Machine Works Co., New York.

Both Rhineland and Fanfir bearings are made in all the more common sizes and types for automobile work. Single and double row bearings and combination radial and thrust bearings will be shown.

Bearings and Universals.
Universal Machine Co., Bowling Green, O.

Ball bearings and three-piece universal joints.

Duplex Brakes and Raybestos Lining.
Royal Equipment Co., Bridgeport, Conn.

Duplex brakes are of the external contracting band type and because of the special form of linkage which causes the contraction of the band, the brake is equally effective whether the vehicle is moving forward or backward. Raymond brakes are also of the external contracting type. Raybestos is a friction material made of asbestos woven with copper wire. It is claimed to be heat, oil and water proof and is extremely durable; it is used for brake linings and clutch plate facings and other

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frictional surfaces. The Gyrex gasolene mixer also will be shown. It comprises a small perforated freely mounted rotary fan which is positioned in the manifold. The movement of the gases causes the fan to spin and the movement tends to thoroughly mix the gases.

Multibestos.
Standard Woven Fabric Co., Framingham, Mass.

A spiral-woven clutch facing is a new addition to the Multibestos line this season; instead of being woven in a straight piece and then forced into a circular band upon the clutch it is woven in a spiral of the diameter required by specifications; it is then heat-treated to render it durable and wear-resisting. Another new product is a Multibestos facing for a friction transmission wheel; this is designed especially for cyclecar use. Is used also for brake linings.

Multibestos is of asbestos and brass wire interwoven; company claims to be the only one to make 3/16 and ¼-inch sizes of material respectively in 3- and 4-ply and without using "stuffers." Weave is bound all the way through.

Motobestos and Asbestos Products.
Asbestos & Rubber Works of America.

Motobestos, for brake linings, is leader of company's line. It will not pack, is waterproof, will not get hard and glaze and always remains soft and gripping, due to special compound and treatment. Other asbestos products include Ajax brake lining, a special wireless lining for Ford cars, Asbestolith, Motobestos packing, gaskets and spark plug yarns.

Whitney Chains and Tools.
Whitney Mfg. Co., Hartford, Conn.

Types—Silent, block and roller chains in all sizes; hand and weight-feed milling machines, water tool grinders, Presto chucks and collets and friction tapping devices.

Features — Silent chains and correct sprockets give long service with silence and efficiency; roller and block chains have deep side plates which add strength; cotter detachable chains can easily be lengthened, shortened or repaired without the use of special tools. The detachable type and a riveted type are interchangeable.

Silent Chains.
Link-Belt Co., Nicetown, Philadelphia, Pa.

Link-Belt Silent Chains—For operating cams, fans, magnetos, pump shafts and other parts ordinarily operated by trains of gears.

Features—Company claims use of semi-circular, case-hardened bushings and case-hardened pins in the joints causes the chains to run a long period without elongation.

Baldwin Chains and Sprockets.
Baldwin Chain & Mfg. Co., Worcester, Mass.

Baldwin drive chains are made riveted and detachable; high quality of material and workmanship gives strength and durability. Sprockets are claimed to be strong and durable.

Diamond Power Chains and Sprockets.
Diamond Chain & Mfg. Co., Indianapolis.

Block and roller power transmission chains; made of high-grade material; sprockets of high quality and durability.

Brown Top Lifter.
Brown Trafilog Co., Cleveland, O.

A new device; makes a one-man top out of any top.

Features—Consists of two poles—one on each side of the car—which attach to a collapsed top at the upper end of the vertical front bow, the lower end of the poles being at the running board; after loosening the top at all points the operator stands in the tonneau, grasps the top and pulls; the poles carry it upward and forward with but little effort on the part of the operator and the poles, being inclined forward when the top has reached its extended position, hold the top until the operator fastens it. The device is arranged for being easily stowed away. Another form of the lifter consists of a bar across the top at the point of attachment and but one pole, this being positioned in the center. Device is adjustable to any top.

Solitaire Tops and Pantasote.
The Pantasote Co., New York City.

An easily raised and lowered top. Claimed it can be "Raised with 2 Fingers in 10 Seconds." Top is supported at the back of the body only; no bows attach to the front seat to impede entrance and exit. No cotter pins, nuts or parts to be placed or shifted. Mechanism simple and cannot get out of order or cut the covering material. Solitaire sockets are formed in a variety of sizes, to fit any length of car. Company states that any top maker can construct the top when supplied with the sockets. Company also makes Pantasote, a substitute for leather.

Numotor Fabrics.
L. J. Mutty Co., Boston, Mass.

Numotor products include mohairs, coverts, serges, twills, etc., leathers, and double and single rubber clothes.

Features—Numotor fabrics are made from high-grade cotton, dyed in the fiber, insuring fast and even color. They are fiber-dyed with "Indanthrene," a standard dye used by the United States and German government. For tops—double texture, with a high-grade Para rubber interlining. For curtains—single or double texture. For seat covers—single texture, to match top. Can be removed and cleaned.

Neverleek Top Materials.
F. S. Carr Co., Boston, Mass.

Neverleek Top Covering — Guaranteed leak-proof without limitations; claimed to be the only material made especially for use in automobile tops; absolutely waterproof; not affected by constant folding; retains shape and appearance; easily cleaned; claimed to be the only covering waterproofed with new live rubber so processed that it retains its waterproof qualities for years. Company also makes materials for upholstering and other uses.

Sharrer One-Hand Top.
Sharrer Patent Top Co., New York City.

Made to fit any style or size of body; no hinges, levers, pivots, springs, nuts or cotter pins are used; an invisible flexible cable arranged in bows makes possible the one-hand operation of the top; is rigid, has no bows or sockets at the front seats, cannot scratch the body finish, is light in weight and folds automatically back into position to take the envelope. Bows are of steel tubing and attach at rear seat only.

Golde One-Man Top.
Golde Patent Mfg. Co., New York City.

The Golde top is so designed that it can be raised or lowered by one man; is bowed at rear only. A new feature is a removable top case of wood or metal, or both, which can be fitted to any car; it takes the place of an envelope; with this, it is necessary only to lift the cover of the case and swing the top out; extends but a few inches beyond the rear of the body.

Budd Steel Bodies.
Edward G. Budd Mfg. Co., Philadelphia, Pa.

Steel sections formed in dies, reinforced only where necessary, giving a lighter and stronger construction than is obtainable with wood. Bodies can be cleaned out with a hose without the danger of warping and cracking which lies in wood bodies.

Laidlaw Automobile Fabrics.
William R. Laidlaw, Jr., New York City.

New process has been devised for rendering cloths waterproof, gasolene-proof and sun-proof; materials for upholstering and tops. Special line of Laidlaw "Halo" trimming cloths. Harmonious blending of colors.

Automobile Leathers.
P. Reilly & Son, Newark, N. J.

Company's product includes a complete line of patent and enameled leathers for use in trimming automobiles. Durability and quality of materials are features claimed.

Chase Top Fabrics.
L. C. Chase & Co., Boston, Mass.

Chase leather; genuine mohair mackintosh cloth; Chase rubber goods; quality and serviceability of materials; variety of weights and colors.

Springfield Metal Bodies.
Springfield Metal Body Co., Springfield, Mass.

Aluminum and steel bodies; made in convertible and non-convertible types and to special order. Convertible types may be open or enclosed; windows are carried hidden frim view, out of the way, secure from breakage and rattle; windshield is one-piece construction, giving clear vision without

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sacrifice of ventilation; top, when raised, meets windshield and side window construction in a secure, weatherproof joint; folding method of storing glass window.

Non-Gran Bearing Metal.
American Bronze Co., Berwyn, Pa.

Non-Gran is a special bearing bronze which, because of the method of manufacture, is of a fibrous nature and free from grain, which, it is claimed, is chiefly responsible for its wearing qualities. The greatest care has been taken in the alloying to make the metal of uniform texture and free from weak or bad spots. The metal is especially recommended for high-speed bearings carrying steady loads, and bearings of the sort are cast to manufacturer's specifications. For use in the garage and in general repair work, Non-Gran is put up in cored-bar form and in assortments of various diameters which make for convenience.

Cramp's Metal Products.
William Cramp & Sons Ship & Engine Building Co., Philadelphia, Pa.

Cored bars for bushings; 17 sizes, 6 and 12 inches long, 1 to 3¼ inches in outside diameter and ½ to 2½ inches in inside diameter. Solid bars up to 2 inches in diameeter. Furnished either in Parsons White Brass or Cramp's Special Bearing Bronze. Parsons White Brass for main engine and crankpin bearings. Cramp's Special Bearing Bronze for wristpin, camshaft and transmission bearings, valve stem guides and similar bearings.

Chrome Vanadium Steel Products.
Carnegie Steel Co., Pittsburgh, Pa.

Company will exhibit products which illustrate the scope of application of the grades of steel produced; tests for various grades will be illustrated.

Krupp Steels.
Thos. Prosser & Son, New York City.

Steels and completed steel parts made by Fried. Krupp cast steel works, Essen, Germany; consists of axles, crankshafts and other steel forgings.

National Tubing.
National Tube Co., Pittsburgh, Pa.

Seamless tubing for axles, torsion rods, windshield, piping and other purposes.

Features—Quality of material and excellence of workmanship.

Flexible Metal Tubing.
Schoen-Jackson Co., Media, Pa.

Flexible metal tubing in a variety of styles and sizes for use as exhaust pipe, hot air leads, air hose or gasolene piping.

Auto-Flex Conduit.
Nat'l Metal Molding Co., Pittsburgh, Pa.

Auto-Flex—A new flexible material for encasing wiring in automobiles; is marketed with a complete line of fittings; made in Types A and B; Type A is made of selected fiber cord coiled upon itself in the form of a helix and tightly interwoven with very tough thread to form a tube which is treated with moisture-proof compound and over which a rugged covering of yarn is woven; the completed tube is impregnated with special fire- and moisture-proof compounds and is finished with finely ground mica. Type B is made in the same way as Type A, except that the outer covering is braided instead of woven and the ground mica is omitted.

Type A is recommended for wiring under the hood and upon the chassis and Type B for wiring to headlights or to any point where the tube is exposed. as the surface of this type is left smooth for the application of paint or enamel. Fittings have been standardized for attachment to practically any car, and particular attention has been paid to centralizing control and distribution of the lighting circuits in one box and to the separation and arrangement of contact strips, simplifying connections, testing and locating trouble.

Yale Mufflers.
Yale Steel Stamping Co., Oostburg, Wis.

Sizes—5, 7, 10, 14, 20, 24 and 28 inches; all diameters 6 inches. Cyclecar mufflers are made in any desired length, with diameters of 3½, 5 and 6 inches.

Features—Made from sheet steel, assembled by an electric welding process, all parts being stamped in presses instead of being cast, thus allowing for expansion and contraction; no back pressure. Guaranteed against defective material and workmanship for one year.

Jasco Seamless Steel Tanks.
Janney, Steinmetz & Co., Philadelphia, Pa.

A new seamless steel gasolene tank in a square model has been added to the line; it is made 13 inches square and 30 to 36 inches long; also 12 inches high and 14 inches wide, with convenient lengths. Company claims this tank is especially convenient for rear underhanging. The line of products also includes round tanks for gasolene, air and oil; and other pressed and seamless drawn steel specialties.

Dann Oil Cushion Spring Insert.
Dann Oil Cushion Spring Insert Co., Chicago, Ill.

Device consists of a thin, perforated strip of special alloy steel which fits between the spring leaves for their whole length and carries in its perforations a heavy, fibrous grease; claimed that the retention of the lubricant in the perforations ensures absence of squeaks and avoids rusting and sticking.

Soss Invisible Hinges.
Soss Mfg. Co., Brooklyn, N. Y.

Model No. 121 is a new hinge of which the feature is that it requires a door pillar but ⅞-inch wide and is detached by removing two screws. The whole Soss line features its invisibility; non-corrosive cases cover the mechanism and prevent water reaching the wood of the car through the hinge. Strength, long wear and rigidity are claimed.

McCord Radiators.
McCord Mfg. Co., Detroit, Mich.

Cellular and tubular type radiators to meet all requirements; fans and force-feed lubricators in a variety of sizes; McKim copper asbestos gaskets in every shape and size for motor car use.

Concealed Hinges.
English & Mersick Co., New Haven, Conn.

A drop-forged concealed hinge with a drawn-brass, non-rusting casing; all forged parts case-hardened. Company also manufactures other metal trimmings for automobile use.

Valentine's Varnishes and Colors.
Valentine & Co., New York City.

Phenomenal Deep Green, a new color, has been added. Company features Vanadium Varnish, for chassis finishing, the only varnish which will resist the action of soap and water; also, Vanadium Quick Finishing Varnish, which dries hard over night.

Paints and Colors.
C. A. Willey Co., Long Island City, N. Y.

Manufactures colors especially for automobile work; also filling-up specialties for both wood and metal surfaces.

Electric Riveters.
Eveland Engineering & Mfg. Co., Philadelphia, Pa.

Models—Made in 16 models for various size work and different applications.

Features—The machine is claimed to be the only electric riveting machine on the market, and it is also stated that the electric machine does better work than the air-driven riveters and at one-quarter the cost. The rivet is heated to any desired temperature, according to the current passing through it, and because of the fact that it is electrically heated its temperature is said to be uniform throughout, eliminating strains due to unequal expansion and contraction. The machine also can be used for heating steel for bending or for tempering.

Baush Drilling Machines.
Baush Machine Tool Co., Springfield, Mass.

Multiple-spindle drilling machines; made of high-grade material; efficient and labor-saving; company also manufactures other machinery.

Die Castings.
H. H. Franklin Mfg. Co., Syracuse, N. Y.

Small and intricate parts are cast under pressure from a special babbitt metal; process assures accuracy which makes machining unnecessary. Small as well as large parts are produced by the same process.

Die Castings.
Doehler Die Casting Co., Brooklyn, N. Y.

Brass die castings; whereas die castings generaly are made of a babbitt metal or zinc

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alloy, this company has developed a process for making die castings of brass, with a finish so accurate that machining is required in extreme cases only. Other metals are cast with accuracy, which makes machining unnecessary. Babbitt-lined bronze bearings are featured.

Die Castings.
National Lead Co., New York City.

Small and large and intricate parts cast accurately and without flaws; economy in casting more intricate pieces. Paints are also a part of this company's line.

Soss Die Castings.
Soss Mfg. Co., Brooklyn, N. Y.

Accuracy, uniformity and quality are claimed for Soss die-cast products. Company also manufactures and sells die casting machinery.

Spicer Universal Joints.
Spicer Mfg. Co., Plainfield, N. J.

Enclosed universal joints for use in transmission systems. The advantages claimed are durability and efficiency because the enclosure keeps the lubricant in and the dirt out, eliminating friction and wear. The joints are made in several sizes to transmit low or high power.

Sparton Safety Blade Fans.
Sparks-Withington Co., Jackson, Mich.

A fan in which the side of the blade toward the radiator is set in the plane of the rim, so that should the fan work loose the edges of the blades will not tear the radiator. Volume of air, by means of blade construction, has been increased 15½ per cent.

Wasson Piston Rings.
Wasson Piston Ring Co., Hoboken, N. J.

Peined concentric rings which are said to exert equal pressure on all sides are stocked in all sizes. The rings are formed of cast iron and are peined in a special machine so that the correct elasticity is obtained.

Automobile Parts.
Houpert Machine Co., New York City.

Specialties in cylinder grinding, making pistons and piston rings and grinding crankshafts. Also manufactures other parts as required. Company features high quality of its work and its ability to take care of any grinding operation.

Gould Electrical Apparatus.
Gould Storage Battery Co., New York City.

Besides various types of storage batteries for use on electric vehicles and in connection with electric lighting sets and starting systems, a combined lighting dynamo and ignition system and a new starter will be shown.

Metal Stampings.
Metal Stamping Co., Long Island City, N.Y.

To its line of metal products this company has added a number of specialties for Ford cars, including hub caps, wheel pullers, lighting outfits, grease cups and oil gauges.

B-T-K Parts.
Auto Parts Mfg. Co., Muncie, Ind.

Gearsets, clutches, control levers and steering gears in several different forms; clutches of several styles are produced. All kinds of electro-plating and gear-cutting is done at the special order of manufacturers.

Hayes Metal Parts.
Hayes Mfg. Co., Detroit, Mich.

Metal bodies, running boards, fenders, hoods, oil pans and various other sheet metal parts.

Steel Parts.
Detroit Steel Products Co., Detroit, Mich.

Forged and cast steel parts for motors, and standard parts for assembled cars.

Automobile Parts.
Auto Parts Co., Chicago, Ill.

Company manufactures parts for automobile use.

Clear Vision Windshields.
Cox Brass Co., Albany, N. Y.

Models—Models to fit any car in both the straight and the zig-zag types.

Features—Ease of attachment and manipulation. The hinge joint is so designed that the shiftable pane is held absolutely rigid in the position desired, yet it can be shifted with no trouble to suit conditions that arise. The shields are finished in brass, nickel or black enamel to suit.

Drop Forgings.
Cleveland Hardware Co., Cleveland, O.

Company features its stock of forgings which include a complete line of those most in use in automobile construction, such as hand levers, running board hangers, spring shackles, steering ball arms, tire holders, radius rod yokes, body irons, gooseneck irons and bow sockets. Others are furnished on specifications.

Detroit Lubricators.
Detroit Lubricator Co., Detroit, Mich.

Detroit mechanical force feed lubricators are made in sizes to suit both large and small motors. The devices are positive in action and free from trouble. Oil cups and grease cups also are shown.

Parts and Castings.
Manufacturers' Foundry Co., Waterbury, Conn.

Cylinders for automobiles and motorcycles and for power and air pumps; pistons for the same. Castings for various parts. Company features its ability to perform intricatea coring and accurate workmanship and to produce a smooth finish.

Machine Work.
Fort Dearborn Mfg. Co., Chicago, Ill.

Company's principal business is the production of special machine work.

Westinghouse Castings.
Westinghouse Machine Co., East Pittsburgh, Pa.

Air Furnace Iron, a particularly fine grade of material, is used in making Westinghouse castings, which are turned out rough and finished; company will exhibit a complete engine built from its casting as a demonstration of the wide range of its product.

MISCELLANEOUS SPECIALTIES

Gemco Specialties.
Garage Equipment Mfg. Co., Milwaukee, Wis.

Additions to this company's comprehensive production are: Gemco Cadillac bumper; $7 to $9. Gemco Overland bumper; $7 to $9; Semi-Automatic bumper, for full- or semi-elliptic springs; $7 to $9. Gemco rear end bumper; $6 to $8.75. Gemco dash carburetter priming control; $125 per hundred. Gemco dash lamp, No. 92; $9 to $14 per pair. Gemco searchlights; $2.50 to $15. Gemco combination light and license bracket; $2.50. Cyclecar tail lamp; $1.75 and $2. Gemco lamp bracket; 20 to 45 cents. Headlight forks. Acme rear end tire holders; $6.25. Gemco rear and "basket" tire holder; $7. Ford rear end tire holder; $3.50. Hupmobile rear end tire holder; $4. Torpedo tire and demountable rim holders; $4.75 to $5.50. Ford Torpedo tire holders; $2.25 to $2.50. Atlas running board tire holders; $2.25 and $2.75. Gemco spark plug air pump; $8 to $12. Gemco spark plugs; $100 per hundred. Gemco Ford shock absorber; $5. Also robe rails, valves, lamp and license brackets, etc.

Hans Motor Equipment.
Hans Motor Equipment Co., La Crosse, Wis.

New devices include: Dash priming device; $3.50. Dash crankcase oil level gauge; $5 and $5.50. Dash crankcase oil gauge for Ford cars; 50 and 75 cents. Remainder of line consists of air, oil and gasolene gauges of various sorts and sizes; filler caps and flanges; gasolene separators; flange connections for gasolene tanks; air pump, gauge and shut-off; hood locks; grease cups; air pressure pumps; special pump and pressure gauge; dash oil sight feeds; screwdrivers; an air pressure dash gauge, the face of which sets flush with the dash; is attached by means of a clamp on the motor side of the dash. Special line of products for Ford cars.

Townsend Grease Guns.
S. P. Townsend & Co., Orange, N. J.

Sizes—1-pound, 12 ounces, 8 ounces and 6 ounces.

Features—Consists of an inner and outer tube, the inner being removable by unscrewing the cap; the inner tube contains a slot the whole length of its side which per-

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mits easy and rapid filling; plunger operated by a quadruple screw and crank handle which permits a pound of grease to be discharged in 15 seconds; is clean, operates rapidly, is easily filled and is exact.

Prices—1-pound, $5; 12-ounce, $4; 8-ounce, $3.50; 6-ounce, $3.

Monarch Lighters.
Benford Mfg. Co., Mount Vernon, N. Y.

Features—A single movement suffices to start the flow of gas to the headlights and cause a spark to jump the burner gaps, lighting the gas. The lever controlling the flow of gas and the switch at the same time is positioned on the dash convenient to the hand of the operator. To turn off the lights simply necessitates shutting off a single needle valve mounted on the same casing with the control lever. The lighter is very easily installed and is furnished with Alco burners with German lava tips, the necessary tubing and wire, besides the switch and valve.

Price—$6.

Chauphone.
Western Electric Co., Pittsfield, Mass.

The chauphone is a telephone for use on enclosed cars for giving instructions to the chauffeur without necessitating opening the door or window. The device comprises a regulation telephone transmitter in circuit with a loud speaking receiver fitted with a projector which is situated behind the driver. The directions can be heard without the driver putting the receiver to his ear.

Specialties.
Randall-Faichney Co., Boston, Mass.

Blitz Spark Plugs—A new product. Two-fold mica insulation completely encased in specially annealed porcelain; firing points of special alloy of platinum and iridium; simplicity of parts. Price—$1.

B-Line grease guns, Copley leather-packed guns, Jericho gas regulator, Webster gasolene gauges and Ranfac vulcanizing thermometers are other Randall-Faichney products.

Oliver Jacks.
Oliver Mfg. Co., Chicago, Ill.

Oliver jacks are made in three models—Peerless, Tire Saver and Sampson. The Sampson jack is the heaviest of the line and the Tire Saver models are made for jacking up the car when stored to keep the weight off the tires. The operation of jacking up is simplified so that a minimum of time is taken. The best of material and workmanship are put into the jacks, which are made in a variety of sizes to meet all needs.

Campbell Specialties.
Perkins-Campbell Co., Cincinnati, O.

Campbell waterproof seat covers; of olive drab jeans or brown or gray mohair. Campbell Little Steam Vulcanizer; a small, open-burner vulcanizer with steam chest; indestructible; simple in operation; price, $2.25. Campbell leather goods, boots for steering arms, magnetos, etc. Campbell Ford specialties; fan belt and steering arm boots.

Cowles Specialties.
C. Cowles & Co., New Haven, Conn.

The Fisher mechanical window lift, designed to aid in the elevation of a window from its enclosure, is a new product, as are: A windshield fixture with detachable part; channel moldings, metal and rubber, for frameless windows; dome lights; concealed toilet cases, and step lights. Besides these, the company produces foot warmers, lamps, fittings, trimmings and a variety of other accessories.

S. Breakstone, Chicago, Ill.

Hopewell tire cases, $3 to $6; inner tube bags, 50 cents to $1.25; Hopewell Bros. lamp covers, 75 cents to $2; square side lamp covers, 75 cents to $1.25; fleece-lined rubber cloth lamp covers, for various makes of lamps; Over-All lamp covers, 50 cents to $1.05; Russell tire cases, $2.50 and $3; Paos and Takoff soaps; Vibracator noise locaters; Hopewell Servall bags, 75 cents to $3.

Bethlehem Spark Plugs.
Silvex Co., New York City.

The Bethlehem plug is a mica-insulated plug and is a new product. Its leading feature is the fitting of five electrodes which converge toward the central electrode. The plug is made in both metric and standard threads and sizes, and in all the more common lengths. Glad Rags polishing cloths also will be shown.

Monarch Wheel Pullers.
Benford Mfg. Co., Mount Vernon, N. Y.

The puller is very light and easily carried in the tool kit; it is intended primarily for use with Ford cars. One important point is that it is possible to see through the device, the center being webbed, so that the progress of the work can be seen. With it it is possible to get a grip on the work without the use of a large wrench.

Slikup Specialties.
N. B. Arnold, Brooklyn, N. Y.

Slikup, for preserving rubber; Slikup engine enamel; Slikup aluminum paint; Slikup auto soap; Slikup body polish; Slikup metal polish; Slikup auto varnish; Slikup metal finish; Slikup enamel top dressing; Slikup mohair top cleaner; Slikup hand cleaner, and Slikup Kant Rust.

Coes Wrenches.
Coes Wrench Co., Worcester, Mass.

Company makes and will exhibit a full line of wrenches; also several automobile tool kits. Features fact that it has been in business since 1843.

Grinnell Gloves.
Morrison-Ricker Mfg. Co., Grinnell, Ia.

Grinnell gloves and gauntlets are made in a variety of styles, a special glove for motor car use being known as the Griptite. It has the palm of the hand stitched so that it is corrugated, affording a surface which is claimed will not slip on the surface of the steering wheel.

Steering Devices.
Modern Auto Appliance Co., Chatham, N. Y.

Little Steersman—Consists of a spring which attaches to the front spring seats and the center of the steering rod; designed to lessen the strains of steering and saves on tire wear. For this season a special Little Steersman for Ford cars has been brought out.

Hand-Warming Steering Wheels.
Warm Hand Steering Wheel Corp., Inc., Poughkeepsie, N. Y.

Steering wheel rims upon which are wound electric heating coils which when connected with a battery or other source of current, attain a temperature just high enough to keep the hands warm, the coils being placed where the hands naturally grasp the rim. Special model for Ford cars.

Ajax Trunks and Tire Cases.
Ajax Trunk & Sample Case Co., New York City.

Models—Made in a variety of sizes and styles for application to practically all makes of automobiles.

Features—"Newness" in the line comprises three models of fender trunks designed especially for use with Cole cars, a coat rail bag and a tire trunk also intended for Cole cars; one of the "high spots" of the line is a "restaurant" trunk which contains a compartment for ice and for victuals and a complete set of dishes. The trunks are formed of the best material, are absolutely dust and waterproof and conform to the lines of the car to which they are attached.

Globe Trunks and Boxes.
Globe Machine & Stamping Co., Cleveland.

New products include: Special Ford tool boxes; Strong or Security boxes; Automobile trunks which will carry two suit cases yet occupy small space; Auto Refrigerator, holding refreshments for seven persons. Line for the coming season includes 32 sizes of boxes. Company features its ability to supply a box from stock for nearly every make of car. Company also makes stampings and specialties to order.

Berg Automobile Trunks.
Berg Auto Trunk & Specialty Co., New York City.

Trunks are made in various sizes and styles and for various uses; line includes tire trunks, fender trunks and other styles.

Pyrene Fire Extinguishers.
Pyrene Mfg. Co., New York City.

Models—One.

Features—A non-corrosive, non-damaging, non-freezing, non-deteriorating liquid which forms a blanket over the fire when squirted upon it. Is contained in a small, easily portable metal container and is expelled by a small double-acting pumping

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mechanism. Is attached to the car by means of a specially designed bracket. Company recently succeeded in having fire insurance companies offer a 15 per cent. reduction on cars Pyrene-equipped.

Prices—Brass, $7; nickel-plated, $8.

Simplex Fire Extinguishers.
David Kahnweiler's Sons, New York City.

Fire extinguisher which works without a pump, liquefied gases being forced out under pressure when a small capsule is broken. Will not injure surfaces with which it comes in contact and is easily handled.

Hydraulic Oil Storage Systems.
Hydraulic Oil Storage Co., New York City.

Oil and gasolene storage systems in which water is injected into the tank to displace the gasolene; the gasolene is drawn off from the top of the tank so that impurities settle to the bottom and are drawn off with the water when the tank is drained preparatory to filling. The arrangement is such that the inflow of water ceases the moment the last of the gasolene passes from the tank, so that there is no possibility of getting water into the tank of the car. Portable tanks, pumps and garage oil storage systems also are made.

Cox Welding and Decarbonizing Sets.
Cox Brass Co., Albany, N. Y.

Set comprises acetylene and oxygen tanks and regulators which automatically control the flow of the gases to the welding torch. The torch is provided with six interchangeable tips for various kinds of work, making the scope of the outfit exceptionally broad. The necessary flux, goggles and wrenches and also the flexible tubing for use as a decarbonizer accompany the outfit.

Price—$75.

Electric Sundries.
Fitzgerald Mfg. Co., Torrington, Conn.

A new line of spring and snap terminals as been added; line also includes Never-leak copper asbestos gaskets and other similar products. Pump hose bands are a new product.

Leak-Proof Piston Rings.
McQuay-Norris Mfg. Co., St. Louis, Mo.

Sizes—3½ x ¼-inch; 4½ x 5/16; 5½ x ⅜.

Features—Two-piece ring; concentric; equally distributed tension; continuous, no opening; leak proof; cannot wear leaky; made of special processed gray iron. Are made of two split-ring sections which fit into each other telescopically.

Prices—3½ x ¼, 11 to 29 cents each, according to parcel post zone; 4½ x 5/16, 12 to 41 cents; 5½ x ⅜, 13 to 53 cents.

Tools and Tungsten Steel Valves.
Rich Tool Co., Chicago.

Bits, chucks, drills, reamers, rivet sets and valves.

Features—Company claims to be the only manufacturer producing tungsten steel valves from one-piece forgings. Line of tools has been improved for the 1914 season and a valve-seating reamer has been added. The valve reamer is designed to save the manufacturer of motors the trouble of grinding in of valves; it is necessary only to ream the valve seat, which is a short operation as compared with the grinding-in method. The company's line of high-speed tools was not exhibited last year.

Brown Trafilog.
Brown Trafilog Co., Cleveland, O.

A device designed to record the movements of a car; is actuated by the vibration of the car; a hand records the time the car runs and the time it is stationary and also, by the mark recorded, indicates to a certain extent the manner in which the vehicle has been operated; is designed especially that an owner may know when and how his car has been operated by another than himself and when he himself has not been a passenger.

Perfection Springs.
Perfection Spring Co., Cleveland, O.

Thin leaf springs for touring cars; springs for 1-, 3-, 5- and 7-ton trucks. Oil tempered, heat treated and made of either American or imported Krupp steels.

Automobile Springs.
Tuthill Spring Co., Chicago, Ill.

Automobile body springs of vanadium, nickel chrome or carbon steel; excellence of workmanship; strength and flexibility.

Oils and Lubricants.
Platt & Washburn Refining Co., New York City.

Oils and lubricants for the various needs of automobile service.

Curled Hair.
Sulzberger & Sons Co., Chicago, Ill.

Curled hair for use in upholstering automobile bodies.

Motorcycle Accessories.

Majestic Sidecars.
Majestic Mfg. Co., Worcester, Mass.

Majestic sidecars for attachment to motorcycles, including a new Windsplitter model and a new commercial type, both of which are mounted on underslung chassis.

Motorcycle Parts.
Eclipse Machine Co., Elmira, N. Y.

Eclipse motorcycle clutches for both engine shaft and countershaft application, including a new two-speed model; Morrow and Eclipse coaster brakes and motorcycle band brakes and other parts.

F-N Motorcycle Accessories.
Fentress-Newton Mfg. Co., Detroit, Mich.

F-N tandem seat; foot rests fold up from front or bottom; waterproof Kant Pak cushion; price, complete, $10. F-N spring baggage carrier; consists of tandem seat stripped of cushion and holds; price $5.50. F-N tandem cushion; price, $2. F-N adjustable back rest; price, $2.50. F-N tool bag holder, back rail, Prest-O-Lite holder, license holder, T-bars and U-bars, luggage carrier straps and cushions, foot rests, side seat foot rest, Universal lamp brackets, extension nuts, shouldered nuts, piston rings, solid stock washers, F-N skirt guard.

F. A. Baker & Co., New York City.

Indian Motorcycles and Simplex Sidecars. Infallible lamps, horns, tires and tubes, and other specialties.

Dandy Motorcycle Tail Lamps.
Imperial Brass Mfg. Co., Chicago, Ill.

Model 8-B, with hose nipple; price, $1.50.
Model 9-B, with shut-off cock; price $2.

MOTORCYCLES

"Electrified" motor cars now are so common that the electrical equipment will attract but passing notice at the present show. But the "electrified" motorcycle is something new—at least, to the New York show But at least two of the even dozen motorcycles which will be on view at the Palace will be electrically equipped—the sensational Indian with even an electrical engine starter, while the Excelsior is fitted with an electric lighting system of the dynamo type. In both cases the design of the electrical equipment is adapted from motor car practice, the Indian machine being equipped with a compact motor generator, compound wound, which turns the motor over when the starter switch is closed and "churns up" the necessary current to recharge the battery and carry the lamp load and operate an electric signal when the switch is in the "charging" position. In the Excelsior application the generator is driven by an enclosed chain, and the batteries are "floated across the line," an automatic cutout being provided to open the circuit at low speeds, regulation being inherent with the dynamo.

Aurora Automatic Machinery Co., Aurora, Ill.—Thor.

Consolidated Mfg. Co., Toledo, Ohio—Yale.

Davis Sewing Machine Co., Dayton, Ohio—Dayton.

Emblem Mfg. Co., Angola, N. Y.—Emblem.

Excelsior Motor Mfg. & Supply Co., Chicago, Ill.—Excelsior.

Harley-Davidson Motor Co., Milwaukee, Wis.—Harley-Davidson.

Hendee Mfg. Co., Springfield, Mass.—Indian.

Miami Cycle & Mfg. Co., Middletown, Ohio—Merkel.

Pope Mfg. Co., Hartford, Conn.—Pope.

Reading-Standard Co., Reading, Pa.—R-S.

Schickel Motor Co., Stamford, Conn.—Schickel.

Henderson Motorcycle Co., Detroit, Mich.—Henderson.

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GETTING MOST FROM EMPLOYES BY BEING HUMAN

Reilly and the Sales Manager Encounter a Manufacturer Whose Idea of Maintaining Efficiency Is a Periodic Grouch—Things It Doesn't Accomplish—Reilly's Salesmanship Methods of Handling Workers.

"——and don't forget it! I told you about that once before—and once ought to be enough."

"Yes, sir; yes, sir," said the foreman of the assembling department in the windshield factory, and he looked humbled and nervous as he assumed a cowed attitude in the presence of his employer.

The owner of the business was adding this finishing touch to his tirade when the Sales Manager and Reilly walked in. When they appeared the foreman was dismissed with a wave of the hand and the previously clouded face of the manufacturer lost its foreboding aspect; to the Sales Manager it seemed that their entry had torn a rift in the clouds and let the sunshine beam through.

Reilly Meets the Windshield Maker.

"This is Mr. Reilly, Mr. Rumner; he helps us help you on your way to fortune."

"Oh, yes! Yes! Heard of you before, Mr. Reilly," exclaimed the manufacturer as he grasped Reilly's hand. "And I never heard anything I wouldn't just as soon tell you to your face." The manufacturer laughed heartily at his—to him—joke, and the two visitors had to make believe it was a joke, too, and managed to force a little laugh.

"Things going wrong in the shop?" The Sales Manager nodded in the direction taken by the foreman.

"No, nothing in particular; just had to call him down; that's all. I do it every so often."

"Sort of a fixture, eh?"

"Yes," rejoined Rumner, "I think it's good business. I call 'em all down regular."

"Whether they do anything or not?" asked Reilly.

Gets a Grouch on Regularly Every Week.

"Yes," replied Rumner, "I have to keep 'em tuned up." He couldn't see what the active little mind of Reilly was thinking about him, so Rumner went on. "I think that's the best way I know of to keep the shop going at top speed. Every week or so I get a grouch on, no matter whether I feel grouchy or not, and go through the place and call 'em down. It keeps 'em smart and makes 'em jump around. It certainly gets the most out of the men; makes 'em earn their money."

When the Sales Manager and Rumner began to get down to business Reilly strayed through the shop, which made windshields for the cars he sold; when the business was ended Rumner bade them a cheerful farewell as the Sales Manager threw in the starter and the two whisked back toward the Sales Manager's office.

"Great system, that of old Rumner's," exclaimed Reilly, while the Sales Manager slowed down at a street car crossing.

"Funny old duck, that boy; he's got some queer ideas," admitted the Sales Manager.

"I don't think 'queer' is an exaggeration," remarked Reilly. "I should say that was within two per cent. of absolute accuracy."

"Evidently you don't like him."

"The old cuss seems to be all right—but his system! His system! That gets me!"

"Don't like it?"

The Fault of the "Tuning Up" Plan.

"He thinks he's working out a great efficiency plan, I suppose," continued Reilly, "but it's plain to be seen he doesn't know human nature or men. He may have known once, but he's forgotten; or else he doesn't stop to think."

"He's making money," asserted the Sales Manager.

"I know it, Jim, but if he thinks he's making all he could make he's mistaken. The idea! Calling the men down every so often to keep them 'tuned up'! Who ever heard of such a thing?"

"It's done, isn't it?"

"I suppose it is," admitted Reilly, "and the men who do it think they are getting more out of their help by wielding a club over them periodically, but I never could see it. That's not the way to get a man to do his best."

"No?"

"Certainly not. You never had the jobs that I've had, Jim, and you don't know what it is to be one of a force of men under a nasty boss. I've had all kinds of them in my way, and I never will be able to agree that there is any efficiency in such a professional system as old Rumner has."

"Don't you do it?"

"I do not! I worked in an electrical supply place once when I was a young lad and I never have been able to blot from my mind the boss who used to keep us on the anxious seat. He thought he was producing efficiency, I suppose, but the most his crabbedness ever did for me and the rest of the lads who worked near me was to produce a fine lot of defective work.

How Censure Reduced Shop Efficiency.

"This boss apparently thought he was earning more money himself by doing more bossing. He used to tear around the shop and bawl the life out of everybody. He would rip up and down and every now and then he would fire some one; he had us scared to death. I don't know why I should have been, but I was; I didn't absolutely have to hold the job but, boy like, I hated to get canned.

"But some of the workmen were men with families and had to hold their jobs, so they used to swallow it and do the best they could. Whenever the boss would come through and read the riot act it would leave its impression as plain as day; when the men would see him coming they would try to speed up and look as busy as possible, but the nervous tension was terrific and the result generally was that they cracked tubes and other pieces and didn't do as well as they would have had they been left alone.

Keeps Men's Minds on Pleasing Boss.

"When he was out of earshot, what some of them called him was full of brimstone, and when he disappeared they would slack up a bit and try to get their old nerve back, but it left them nervous; in fact, they always were in a high-strung condition. Some of the work required care, and a nervous man isn't fit for that. One of the boys on a tube machine lost a finger one day just because he got frightened at the boss. That meant a loss in dollars to the company instead of an increase in efficiency. The fact was that instead of the men going along in their own way and doing the most that could be expected of them, their minds were on avoiding a call-down, not on turning out work."

"I think that's true, too."

"What?"

"That being in dread of the boss causes a man to concentrate his energies on avoid-

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ing censure, not on his work," replied the Sales Manager.

"I know it's true from experience, and that's the reason why I try not to be that way in my own shop. I know that a man can do his best if he feels that he is getting a square deal and is not working for a slave driver. I may be a little bit stuck on myself—some folks say I am—but I think my men like me rather well; at least, I have tried to have them. And I believe it pays me financially not to treat them as Rumner treats his employes."

"I'll admit, Reilly, that things do run smoothly in your place."

When and How to Criticize the Employe.

"Fairly so. One thing I do not believe in is berating a man when he has made a mistake. Everybody is entitled to make a few mistakes; we all make 'em; it's impossible not to do so. If a man doesn't get into the habit of making errors and doing things he shouldn't do I don't consider that he's doing anything but acting like an ordinary human being, and therefore he isn't entitled to be called up on the carpet. The man who makes an error should be reminded of it, as a general rule, but that doesn't mean that you have to rush up and shout at him. It's quite possible to talk with a man about such a thing and not make what you say offensive to him.

"Look at young Tommy Trumbull! Since he came in to work for me as a salesman Tommy's done several things that weren't just in accord with my ideas of salesmanship, but do you think it would help matters if I ripped him up the back and made him think he was going to lose his job the next time he did something in a way that didn't agree with my ideas? I don't think so. Several times I have told Tommy the way I think things should be done and have tried to have him understand that I am trying to help him on in the right way, not chastise him for having done things the wrong way."

"What do you think of the Old Man, up at the shop?"

Likening Employes to Customers.

"He's one of the best managers of men I ever knew," replied Reilly. "There isn't a man in the shop who wouldn't give the Old Man his shirt; they'd fight to see who had that privilege. And you never see the Old Man around bawling out the men, do you?"

"If he does I never caught him at it."

"No! And you never will! Did you ever notice the inconsistency in some people and some organizations, Jim?"

"Just how?"

"Well did——" Reilly caught at the edge of the seat as the car bumped over a railroad crossing. "Did you ever realize that old Rumner, for instance, is treating his customers one way and his men the other way and that his men are nothing but customers, after all?"

"You'll have to explain that, I'm afraid."

"The men," Reilly explained, "are customers in that they are exchanging their labor for Rumner's money and he is trying to get as much for his money as he can. It works both ways, of course, but for this occasion let the men be customers. As to what his other customers are there is no need of explanation.

"But, now, here's the point: He comes into contact with those who buy his goods and in endeavoring to persuade them that they want his stuff he uses his best salesmanship; he treats them courteously and tries to lead them rather than to force them; the result is that he gets much more from them than he would if he tried to handle them the way he handles his men. He knows salesmanship pretty well and can handle his customers right.

Tries to Drive, Not Lead, His Men.

"And, now, here's the other side: Instead of trying to lead his men into giving more work for his money and in paying him a larger toll of loyalty he casts away his selling ability and tries to drive them into it. If he put one-half the salesmanship into handling his men that he does in handling his customers he would be worlds better off. Customers and men are made of the same material; there isn't an iota of difference, and there isn't much difference, basically, in the way they should be handled. As a matter of fact, Jim, the whole game of life is one big piece of salesmanship; you want somebody to give you something for something, and the more you apply your salesmanship the better you will come out."

"Old Rumner, then, according to your definition, is only half a salesman."

"Old Rumner is like a man who tries to whale his kids into being affectionate. The only case I know of in which that works is with a dog."

Foreign Body Makes a Whole New Car.

Even though the chassis were originally manufactured in this country, if its body has been built abroad, it must pay the full 45 per cent. ad valorem duty under the completed car classification when it is brought back into the United States, according to a ruling made this week by the Board of United States General Appraisers; this body, which decides duty questions, disallowed the claim of the General Motors Export Co., of New York City, that the chassis had not been improved, and the board furthermore declared that the company had failed to comply with the regulations governing the return of American goods.

Makes Owner Liable for Dealer's Employe.

The driver who is delivering a car to a buyer is acting for the buyer and not for the dealer, in the opinion of Circuit Judge Murphy, of Detroit, who was called upon last week to render an opinion in an action brought against the Ford Motor Co. by Jan Janick; the Ford company was delivering a car to a buyer outside the city limits and the car struck Janick as he was alighting from a street car. He sued, but the case was decided against him after two half days of argument, the court holding that at the time of the accident the driver really was acting for the owner of the car and not for the Ford company, although it paid him his salary.

Cincinnati to Have Two Dealers' Shows.

The differences among the automobile dealers in Cincinnati, O., which led to the formation of the Cincinnati Automobile Trade Association, a rival to the Cincinnati Automobile Dealers' Association, has led to plans for rival shows in February; the new organization, which is made up of dealers who objected to the manner in which the Dealers' Association conducted past shows, has decided to hold an exhibit of its own in the Music Hall. It will be held the same week or the week preceding the older organization's show, which is scheduled to open February 21.

Kissel Branch Moves into Palatial B.

The Kissel Motor Car Co. last week possession of the new building in San Francisco erected for its Pacific Coast branch and which is reputed to be one of the most palatial automobile establishments west of the Mississippi. It is a two-story structure with a frontage of 60 feet on Van Ness avenue and a depth of 137 feet on Gerry street. The floor of the salesroom is of white inlaid tile, which, with hardwood trim and tinted walls and ceiling makes the place an uncommonly attractive one. The second floor is devoted to the Kissel service department.

Must Pay for Repairs on Borrowed Car.

Because Walton C. Bunce, of Hartford, Conn., took Dr. N. J. Goodwin's car to Robert R. Ashwell's garage for repairs after it broke down while in the possession of Bunce, the latter must pay the repair bill; Ashwell claimed he performed $191.96 worth of repairs on Bunce's order, but when he came to collect he had trouble. He promptly sued Bunce and, although the latter denied having ordered the repairs, the jury gave the garageman a verdict of $205.88.

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STRIPPING THE TRADE-MARK OF ITS MYSTERY

Member of Patent Office Force Gives "Inside" View on What a Trade-Mark Is and the Rules That Govern it—Cites Instances Showing Value of Priority—Light on Simple But Often Misunderstood Points

Those who manufacture and those who sell are probably well aware that there is such a thing as a trade mark, but when the man who makes or sells finds himself concerned with a trade mark he is quite likely to regard it as a vague and mysterious matter which has more kinks and angles in its makeup than any one man is capable of comprehending.

There are also the allied questions of patents and copyrights. One may think they are much alike, but such is not the case. The trade mark lasts forever under the common law, while the patent and copyright are valid only during a fixed period. It may also be of interest for those who are concerned with trade marks to know that:

The trade mark does not have to be registered to become effective.

The man who first registers a mark has not necessarily an undisputed right to it.

The right to a trade mark depends upon priority of adoption and use.

The man who uses the trade mark need not be the maker of the goods.

Attorney's Advice an "Outside View."

A responsible patent attorney is able to furnish advice on the trade mark question—some advice being better than others—but when all is said and done the attorney's opinion is an "outside view." The "inside view" is that held by the Federal government, and it is likely to differ from the varied views of various attorneys. To make plain the "inside view" William L. Symons of the United States Patent Office recently stated in Printers' Ink the status of the trade mark as viewed by the government itself. Symons went into the many phases of the matter and in defining a trade mark called it "one's commercial signature, or the commercial substitute for one's autograph."

That the trade mark is designed for the protection of the public as well as for the protection of the manufacturer, was his statement. "We must not lose sight of the fact," he said, "that it is not only the first who adopts and uses on an article of commerce an arbitrary sign who is to be protected, but the public also is entitled to be protected from fraud and imposition."

Taking up a question that perpetually puzzles many manufacturers and advertisers, the Patent Office official said: "The distinction between a trade mark, a copyright and a patent should be recognized. Only by keeping the difference between these three classes of property clearly in mind can a comprehensive and satisfactory idea of a trade mark be obtained.

Wherein Patent and Trade-Mark Differ.

"A patent is granted for an invention. A trade mark has no necessary relation to invention. It may be the most common object, such as an arrow or a star. Or, if it is the product of an inventive faculty, such as a coined or fancy word, the protection granted is not accorded because of the ingenuity or skill which was required to product it. If such a word is not used, it will not be protected.

"Both a patent and a copyright are limited in duration; a trade mark is not. It is unlimited as to time and probably as to place. In this country no protection to an invention can be given except under the patent laws, nor to copyrightable matter except by virtue of the copyright laws, while a trade mark is protected under the common law. This indicates a very vital distinction, which is emphatically in favor of the trade mark, inasmuch as no right exists in an invention or in a published literary or artistic work except by virtue of a statute."

Trade-Mark Not Considered Monopoly.

Symons contends that property in a trade mark is not a monopoly—a mooted question in some quarters just now. Said he, "Although the Supreme Court in deciding a case some time since spoke of the use of a trade mark which would give the user practically a monopoly in the sale of any goods other than those produced by him, this probably was not intended to convey the idea that the right to the use of a proper trade mark was in the nature of a monopoly. It does not restrict the right of any member of the public to manufacture any particular article of commerce. It merely prevents anyone from marking his goods in simulation of the mark used by another upon the same kind of goods.

"Registration of a mark under the law gives usually some additional rights and advantages in addition to those which exist under the common law. In some cases registration dispenses with the necessity of certain proof; or it may give certain advantages in procedure; or in preventing infringement; or in recovering damages.

"Under our laws, however, the right to the exclusive use of a trade mark depends on adoption and use. The date of registration is of minor importance, the right depending upon proof of priority of adoption and use. This is a point which it appears difficult for many persons, including some good lawyers, to grasp. It appears to them that after a mark has been registered, especially after contests, the validity of the registration should not be questioned by an applicant for registration who comes in five or ten years after the date of registration. This erroneous view, however, takes no account of the fact that in the United States title depends on priority of adoption coupled with continued use and not upon registration."

Meeting Classification Requirements.

Manufacturers are frequently troubled by the requirement that the class of merchandise to which goods belong must be specified in making application for registration. Questioned with regard to this, Symons explained that the purpose of such specification is to facilitate the examination in the Patent Office to determine whether the same or a similar mark has been registered.

"But," he continued, "I will admit that whereas the general basis of classification is either the material of which the article is made or the purpose or construction of the article, classification is not an exact science. Some classes have not very clear lines of demarcation. For example, it is often difficult to determine whether goods should go in the class of 'Clothing' or the class of 'Fancy Goods, Furnishings and Notions.' Or, again, very often an article of hardware is a receptacle and then it becomes a puzzle whether it belongs in the class for 'Receptacles' or in the class for 'Hardware and Plumbing Supplies.'

"If the Food and Drugs Act requires goods to be labeled in a certain manner, it is the practice of the Patent Office to require the particular description to agree with the labels. Whether whiskey is straight, blend, compound or imitation must be stated. If the syrup on which the mark

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is used is made of corn and maple syrup it should be described as a compound of corn and maple syrup."

What is the "use" of a trade mark upon which registration depends? Symons answered the question in this wise: "The courts have clearly pointed out that the use of a mark and not adoption was the test. Where it has been shown that there was a clear intention to adopt a mark, but no actual use due to circumstances over which the party had no control, it has been held that no right to the mark has been established; actual use in trade is necessary. It is the person who first uses a trade mark who is entitled to protection, not the one who first thought of using it, but did not use it first. The law deals with facts, not intentions.

Use of Mark Necessary to Title.

"However, the Patent Office and the courts are inclined to be liberal on the question of what constitutes use of a trade mark if there is an evident intention to make use of some form of mark.

"In deciding a case some time since, the Commissioner of Patents said that it was not necessary to affix or attach the trade mark to the goods with which it was used to make it a valid trade mark. It was sufficient if the mark is associated with the goods in a manner to distinguish them by the particular mark. In that case the mark claimed had been used on lithographs which were put in the boxes of knit goods, or in some form accompanied the goods. On the other hand, the mere use of an alleged trade mark in a trade list has been held not sufficient to identify it with the goods.

"In another case the Patent Office held that the fact that an applicant advertised his goods in a periodical under a certain name, in the absence of any evidence that the name or mark was attached to the goods, did not constitute trade mark use. A mark used on letterheads, cards and circulars in connection with a business is not used as a trade mark, and a name used in a business, such as the real estate business, is not subject to registration, for the reason that it is not used on or in connection with an article of manufacture. It is fundamental that the trade mark must have been used on an article of commerce.

Necessity of Independent Marks.

"What constitutes the use of a mark is often the subject of controversy in the Patent Office. In one recent case the applicant filed specimens in which the alleged mark appeared as a part of the reading matter at the bottom of the label, but the words claimed did not appear anywhere on the label as an independent or separate mark. When the examining division refused registration on the ground that the use of a trade mark had not been shown an attempt was made to carry the case to higher authority, but ultimately the applicant filed proper specimens. Another case in point was the refusal to register the word 'Fussy' as a trade mark when it appeared only in the legend 'A Fussy Package for Fastidious Folks,' a refusal that provoked ineffective protest.

"Yet another rule which has led to a great deal of controversy—which may not even yet be closed—is that provision of the Act of 1881 which required an applicant to distinguish between the essential and non-essential features of his trade mark. The applicant would specify certain features as the essential features whereas the Patent Office would regard others as the essential. The same question has come up in other forms under the new law which requires a description of the trade mark, but not of its essential features. Difficulty sometimes arises, too, when public insignia constitutes a part of a trade mark, interwoven with the fanciful features of the mark so that it cannot be removed without mutilating the mark."

Character Determines Infringement.

Touching upon a phase of the subject of vital interest to manufacturers, this governmental authority on trade marks said: "It is not necessary that the user of a trade mark produce the goods upon which it is used. One who selects and sells goods may acquire the right to the mark. Likewise a customer acquires the right to a mark by ordering goods put up by a manufacturer under a certain brand or name.

"The question whether one trade mark so nearly resembles another as to cause confusion is one of some difficulty. Not only is the question of similarity hard to decide but persons equally familiar with the subject of trade mark law will differ on many cases. Some courts, too, have applied a strict test, others a more liberal rule. One class of judges will not protest purchasers of goods who do not exercise ordinary caution; another class of judges will protect the incautious or unwary. The courts fairly agree, however, that it is not the expert who is to be considered in determining infringement but the ordinary purchaser. The character of the goods must also be taken into consideration. In the case of engines or dynamos the intelligence and caution exercised by purchasers will prevent confusion, even if the marks are somewhat alike, while an equal degree of similarity between marks on cans of tomatoes would confuse. The Patent Office always resolves a reasonable doubt on the question of similarity against an applicant and in favor of a registrant, unless the consent of the registrant has been obtained.

"The Patent Office does not concede the right of an owner of a very valuable mark to that mark on any and all goods. No absolute right to a trade mark can exist, and the right to its use on one particular article does not give a right to its use upon different articles. This invests with great importance the question of whether goods have the same descriptive qualities, for registration cannot be secured for a trade mark already applied to goods of the same descriptive properties."

Father Liable for Son's Use of Car.

Although the courts in New York City recently decided that a car owner is not liable for negligence of the chauffeur when the chauffeur has borrowed the car for his own use, the exemption from liability does not include those times when the car is being used by members of the car owner's family other than himself, according to an opinion rendered this week in the Appellate Term of the Supreme Court for New York county.

Abraham Cohen, an infant, had sued Louis Borgenecht for injuries sustained when the Borgenecht car, driven by the Borgenecht chauffeur and having Borgenecht's sons as passengers, struck him; the lower court directed a verdict for Borgenecht and then set it aside and the Appellate Court upheld the order which set the verdict aside. It was held that so long as Borgenecht's sons had permission to use the car when they wished the father was liable.

New York Streets No Longer Rentable.

There is more than one way out of a dilemma. New York City has been involved in a tangle of litigation in its attempt to enforce its taxicab ordinance which abolishes rented cab stands in front of hotels, and this week the State of New York came to the rescue. A State law was passed making it a misdemeanor for anyone to rent street space for taxicab stands, which nicely covers the New York City situation and will put the State back of the city in the enforcement of the ordinance and, incidentally, strike a blow at a fine line of hotel keepers' "graft."

Gray Hair Brings Judgment of $250.

A fine head of gray hair netted Mrs. Celia Comings—her name is not Combings—$250 in a suit in the New York City Court this week against the Connecticut Cab Co. which she had sued for $2,000; she claimed she was struck by a taxicab February 22, 1912, and that since that time she has been so troubled with insomnia that her hair turned gray.

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MAINTAINING THE CONDITION OF HIBERNATING BATTERIES

Equalizing the Cells and Judging Condition—How to Use the Hydrometer—General Suggestions for Wintering Accumulators.

What should be done with storage batteries that are laid up for the winter? The question has been answered more than once in Motor World, but the man with a car usually is like the hero of the popular song in that he "wants what he wants when he wants it," and if he is on the point of putting away his battery the fact that the information already has been given doesn't interest him much.

Be it said, therefore, that while the best possible treatment for a battery is to keep it at work under normal working conditions —that is, normal from the battery maker's point of view—it is by no means difficult to prevent material depreciation during the idle months. The equipment on the car is all that is ordinarily required, with the exception of a hydrometer, which is neither expensive nor difficult to get.

A good start means a good deal—in fact, there are cases in which a good start is everything in the sense that an abnormal condition may get worse, as abnormalities often will, and ultimately have a more or less deteriorating effect on the battery. Therefore it is well, before putting the battery on a strict winter diet, to examine it and find out just what it needs before it goes into hibernation.

The cells should be examined and all dust and dirt cleaned away from the tops and the terminals cleaned, if they need it, and smeared with vaseline. Distilled water should be added to bring the level of the electrolyte above the tops of the plates and, incidentally, to make the level the same in all the cells. The electrolyte should be tested with the hydrometer; and this should be done only after the battery has been under charge for half on hour or so, to make certain that the fresh water has thoroughly mixed with the fluid. With the battery in a fully charged condition, the electrolyte should be carefully tested, taking a reading from each cell and taking particular care to eject all the fluid from the hydrometer syringe and from the testing cup, if a separate one is used, so that there will be no mixing of electrolyte and of results from separate cells.

When the battery is fully charged the electrolyte in all the cells should show the same reading, and should test 1.280, though on this particular point different battery mokers differ slightly. However, if the cells read 1.280 all round there need be no worry. If there is a discrepancy in the readings, some cells reading lower than others, the battery should be given an "equalizing charge," which is a long, slow charge at a rate considerably below the normal charging rate. If the readings are within two points of being alike they may be considered satisfactory—that is, if the highest reading is not more than two points above the lowest. For instance, if the high cell reads 1.281 and the lowest 1.279, it may be considered that the electrolyte is sufficiently uniform in density for all practical purposes.

It may be remarked, incidentally, that hydrometer readings are the best possible indication of the condition of a battery charge. If, during the charging of a depleted battery, readings are taken at intervals of half an hour, it will be found that there is a steady increase in the readings up to the maximum, when the increase will cease, indicating that the charge is complete. Two successive readings that are exactly alike may be taken to indicate a complete charge. When a battery is in need of equalizing, however, the high cells will have reached a fully charged state before the low cells, and if the difference is not excessive the continuation of the charge at a low rate will not hurt the high cells, and will bring up the low ones. If there is an excessive difference the procedure is to cut out the low cells and bring them up separately. This usually indicates, however, that the battery is rather the worse for wear or otherwise is in an inefficient condition, and the wisest thing to do under the circumstances is to let the maker, or someone who is qualified to cure battery ills, have the whole set of cells and bring them to a uniformly normal state.

Assuming that the cells are in good condition and that they are properly equalized, the only attention required to keep them healthy through the winter is to give them a charge every two weeks to keep them up, on the principle that a fully charged battery will stand idle with but little deterioration, while one that is more or less discharged will deteriorate more or less, according to the amount of charge lost. The battery will gradually become completely run down if allowed to stand without the reviving charges.

As has been stated, the best way to gauge the state of a charge is to check it with the hydrometer. So, if one wants to be really careful, the thing to do is to run the engine and so drive the dynamo and charge the battery until the hydrometer readings cease rising, and then continue the charge for half an hour at half the speed. The motor should be run at a speed equal to a road speed of about 20 miles an hour during the first part of the charge. If a hydrometer is not used the time should be extended to make sure, and a total time of two or three hours should be allowed.

There is another way of keeping up the battery that certainly has points of advantage. The charge may be put in through a rectifier, which may be plugged into the electric light socket. This is for use with alternating current and its office is to convert it to direct current, which only can be used for battery charging. If the lighting current is direct—or D. C., as it is commonly called, to distinguish it from A. C.—the rectifier is not needed, but a rheostat or its equivalent is required to bring the current down to the proper value. Just what is necessary will depend upon the circumstances, and the battery people can furnish suitable apparatus if the details as to battery and current available are given. With such an outfit the battery can, if so desired, be taken out of the car and kept on a bench or other convenient place.

There are a few precautions that should be observed in battery work that are quite simple, but should not be neglected. A storage battery in course of charging gives off a gas, which rises through the electrolyte in the form of little bubbles and has a sharp and unmistakable odor. This gas is inflammable, and its ignition can cause a nasty explosion which may vary in violence from a mere puff that will cause a burn to a bang that will do real damage —the latter following an accumulation of the gas. Therefore, keep naked flames away from a charging battery. The gas is not of such a nature that the presence of a little in the garage is likely to cause trouble, but it certainly can be ignited if a flame is brought close to the battery.

More batteries are damaged from undercharging than from over-charging, ordinarily. Overcharging at a low rate for a reasonable time is practically harmless even when it is unnecessary, while an undercharged battery goes downhill, as has been stated. Overcharging at a high rate, however, is frightfully hard on the plates, loosening up the active material and causing it to be deposited at the bottom of the cells without doing any useful work.

While a storage battery is by no means a hard thing to keep in condition, it is rather easily spoiled if it is abused—in which it does not differ from most other things that man makes. Obviously, it doesn't make any difference to the battery whether the abuse is the result of ignorance or of the don't-care-a-whoop spirit that is careless of consequences. Therefore it is a good thing to ring up the battery people on the telephone if something comes up that is not understood, and ask for guidance.

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1,068,097. Explosion Engine Governor. Reuben B. Benjamin, Chicago, Ill., assignor to Benjamin Electric Mfg. Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 1, 1912. Serial No. 723,421. (Governor with rotary fan.) 11 claims.

1,068,100. Headlight Controller. Romeyn W. Brace and Romeyn T. Brace, Victor, N. Y. Filed Mar. 1, 1913. Serial No. 751,623. (Headlight controlled by steering gear.) 1 claim.

1,068,107. Vehicle Wheel. Robert Edgar Cole, Highland Creek, Ontario, Canada, assignor of one-half to William Douglas, Toronto, Canada. Filed Apr. 27, 1911. Serial No. 623,725. (Resilient wheel with springs and linkage.) 2 claims.

1,068,112. Road Map for Automobiles. George A. Deardorff, Occoquan, Va., assignor of one-fourth to Howard M. Taylor, Canal Dover, Ohio. Filed July 8, 1912. Serial No. 708,334. (Automatically moving road map.) 5 claims.

1,068,129. Starting Device for Explosive Motors. Henry Hess, Wawa, Pa., assignor to The Hess-Bright Manufacturing Company, Philadelphia, Pa., a Corporation of Delaware. Filed June 3, 1909. Serial No. 499,966. (Means for temporarily cutting out magneto in starting.) 7 claims.

1,068,152. Dynamo Electric Machine, Particularly Applicable for Ignition Purposes in Connection with Internal Combustion Engines. Albert Henry Midgley and Charles Anthony Vandervell, Acton Vale, England. Filed Dec. 6, 1910. Serial No. 595,952. (Lighting dynamo and driving gear.) 2 claims.

1,068,168. Two-Stroke Cycle Motor. Andreas Radovanovic, Zurich, Switzerland. Filed Feb. 11, 1910. Serial No. 543,392. (Two-cycle motor with one end of cylinder acting as pumping chamber.) 17 claims.

1,068,173. Combustion Engine. Emil Schimanek, Budapest, Austria-Hungary. Filed Oct. 11, 1910. Serial No. 586,554. (Valve system.) 4 claims.

1,068,180. Tire Testing Machine. Karl W. Sonntag, St. Louis, Mo. Filed Oct. 10, 1912. Serial No. 725,084. (Power-driven roller for testing tires for wear.) 2 claims.

1,068,181. Resilient Wheel. George Edwin Sprague, West End, Ill. Filed Sept. 18, 1912. Serial No. 721,071. (Wheel with coiled spring suspension spokes.) 4 claims.

1,068,182. Shock-Absorbing Device for Vehicles. Klaus J. Steiner, Pittsburgh, Pa. Filed Oct. 26, 1912. Serial No. 727,918. (Spring-and-cable shock absorbing device.) 11 claims.

1,068,191. Setting Mechanism for Automobile Lamps. Joseph Watzelman, New York, N. Y. Filed Sept. 24, 1912. Serial No. 722,035. (Lamps moved by steering gear.) 10 claims.

1,068,204. Demountable Rim. Walter Charles Baer, Toledo, Ohio. Filed Jan. 11, 1912. Serial No. 670,537. (Screw and lever rim fastening.) 5 claims.

1,068,224. Vehicle Wheel. Ernest De Journo, Allentown, Pa., assignor to Stella Labe, New York, N. Y. Filed Jan. 17, 1911. Serial No. 603,052. (Demountable rim.) 7 claims.

1,068,246. Water-Cooling Radiator. William J. Kells, Jersey City, N. J. Filed Nov. 5, 1912. Serial No. 729,552. (Tubular radiator with integral fan mounting.) 1 claim.

1,068,250. Portable Battery Support. Mathew Koenig, New York, N. Y. Filed Dec. 14, 1912. Serial No. 736,767. (Shelf for pulling out battery on side of vehicle.) 3 claims.

1,068,278. Signal Device for Vehicles. Epilier E. Savage, Asbury Park, N. J. Filed Nov. 1, 1912. Serial No. 729,182. (Visible signal device.) 5 claims.

1,068,297. Revolving Cylinder Internal Combustion Engine. Andrew H. Baird and William J. Turner, Liverpool, England. Filed July 8, 1911. Serial No. 637,514. (Radial cylinder motor.) 13 claims.

1,068,310. Primer for Internal Combustion Motors. Gilman W. Brown, West Newbury, Mass., assignor of one-half to Harriet L. Maddock, Haverhill, Mass., and one-half to Horace W. Brown, West Newbury, Mass. Filed Sept. 18, 1912. Serial No. 720,964. (Priming device with separate tank and carburetter.) 8 claims.

1,068,322. Heater. Lloyd E. Church and John A. Cooney, Bartlesville, Okla. Filed Oct. 22, 1912. Serial No. 727,191. (Electric heater for air supply.) 1 claim.

1,068,329. Shock Absorber for Vehicles. Martin Derihon, Loncin-lez-Liege, Belgium. Filed Aug. 8, 1912. Serial No. 714,071. (Hydraulic shock absorber with vanes.) 5 claims.

1,068,330. Shock Absorber for Vehicles. Martin Derihon, Loncin-lez-Leige, Belgium. Filed Aug. 8, 1912. Serial No. 714,072. (Hydraulic shock absorber with vanes.) 3 claims.

1,068,366. Motor Plow. William N. Robinson, Canyon, Tex., assignor of one-half to Ben Y. Chambless, Canyon, Tex. Filed Nov. 19, 1910. Serial No. 593,172. (Plow control in motor plowing apparatus.) 4 claims.

1,068,379. Internal Combustion Engine. Charles Henry Thomas Alston and Percival Turner Houston, London, England. Filed Sept. 14, 1912. Serial No. 720,426. (Explosion motor with compressed air supply.) 2 claims.

1,068,457. Spring Wheel. Arthur O. Smith, Lakemp, Okla. Filed June 24, 1912. Serial No. 705,604. (Wheel with spring-cushioned hub.) 2 claims.

1,068,481. Multiple-Cylinder Explosive Engine. Everett S. Cameron, Beverly, Mass. Filed Apr. 21, 1911. Serial No. 622,525. (Rotary valves and actuating mechanism.) 1 claim.

1,068,495. Gas-Turbine. Judson D. Geiger, Bucyrus, Ohio. Filed Apr. 25, 1912. Serial No. 693,094. (Gas turbine with hollow shaft and rotor.) 3 claims.

1,068,532. Steel Spring Automobile Tire. Ole G. Rugtwet, Longmont, Colo. Filed Dec. 4, 1912. Serial No. 734,947. (Concentric rims with spacers and springs between.) 1 claim.

1,068,559. Frame for Motor Plows. Harry A. Bean, Leroy township, Barton county, Mo. Filed May 1, 1912. Serial No. 694,553. (Running-gear for motor plows.) 2 claims.

1,068,567. Valve for Internal Combustion Engines. Frederick William Coen, Los Angeles, Cal. Filed Mar. 27, 1912. Serial No. 686,638. (Disk valve and driving gearing.) 2 claims.

1,068,572. Wheel. William Homewood Dean, Newark, Del. Filed June 28, 1912. Serial No. 706,533. (Disk wheel.) 2 claims.

1,068,590. Wheel. Kazimier Jasiecki, Philadelphia, Pa. Filed Jan. 16, 1913. Serial No. 742,360. (Rubber block tread backed by pneumatic tube.) 2 claims.

1,068,595. Internal Combustion Engine. Charles M. Leech, Lima, Ohio. Filed Nov. 25, 1911, Serial No. 662,388. Renewed June 12, 1913. Serial No. 773,347. (Two-cycle motor with rotary crankcase valve.) 9 claims.

1,068,598. Tractor. William Clifford Martyn, St. Kilda, Victoria, Australia. Filed Apr. 27, 1912. Serial No. 693,697. (Power steering gear.) 1 claim.

1,068,619. Pneumatic Tire. Robert J. Wynn, Sault Ste. Marie, Mich. Filed Feb. 10, 1912. Serial No. 676,757. (Fire formed of annular sections.) 1 claim.

1,068,632. Valve Device for Internal Combustion Engines. Andrew C. Dam and Alfred Marshall, New York, N. Y. Filed June 19, 1912. Serial No. 704,561. (Disk valves in cylinder head.) 6 claims.

1,068,644. Shock Absorber. 5 claims.

1,068,654. Expander for Tire Vulcanizers. William A. Hinds, Reading, Pa., assignor of one-half to Sherman H. Hoverter and one-half to Harvey E. Eberly, Reading, Pa. Filed Aug. 16, 1911. Serial No. 644,439. (Expanding core.) 19 claims.

1,068,660. Vehicle Wheel. Joseph D. Ingram, Washburn, Tex. Filed Nov. 20, 1911. Serial No. 661,233. (Wheel with circumferential coiled springs.) 2 claims.

1,068,710. Internal Combustion Engine. Ole O. Storle, Tacoma, Wash. Filed Sept. 15, 1911. Serial No. 649,416. (Two oppositely moving pistons with explosion space between.) 6 claims.

1,068,720. Spring Tire. Charles A. Wheaton, Stockton, Cal. Filed Mar. 25, 1912, Serial No. 686,018. Renewed Dec. 21, 1912. Serial No. 738,0[illegible]. (Wheel with coil springs between inner and outer rims.) 3 claims.

1,068,724. Explosive Engine. Samuel Ybarra, St. Louis, Mo. Filed Nov. 25, 1911. Serial No. 662,278. (Rotary ring valve.) 3 claims.

1,068,725. Internal Combustion Engine. Samuel Ybarra, St. Louis, Mo. Filed Jan. 26, 1912. Serial No. 673,557. (Rotary cup valve.) 6 claims.

1,068,773. Fluid Control for Tanks. Allan G. Hurdman, Denver, Colo., assignor of one-third to William S. Iliff, Denver, Colo. Filed Aug. 15, 1910. Serial No. 577,348. Renewed Feb. 9, 1912. Serial No. 676,696. (Fuel tank under seat with interior valve exteriorly controlled.) 8 claims.

1,068,804. Dust Cap for Automobile Starting Crank Shafts. Alfred Moorhouse, Detroit, Mich., assignor to Hudson Motor Car Company, Detroit, Mich., a Corporation of Michigan. Filed Aug. 3, 1912. Serial No. 713,080. (Cap for shaft-end from which crank has been removed.) 7 claims.

1,068,826. Vehicle Wheel. Albert N. Simmerly, Cleveland, Ohio. Filed Aug. 5, 1910. Serial No. 575,655. (Wheel with tubular spokes enclosing coil springs.) 1 claim.

1,069,109. Automobile Wheel. Frederick A. Bass, Polson, Mont. Filed July 24, 1912. Serial No. 711,318. (Springs between inner and outer rims.) 2 claims.

1,069,137. Antiskidding Attachment to Automobile Wheels. Edward E. Hosmer, East Lynn, Mass. Filed July 26, 1912. Serial No. 711,651. (Sharp pointed steel rods to engage road surface and prevent skids.) 3 claims.

1,069,154. Protector for Automobile Radiators. Arthur V. Maedje, Indianapolis, Ind., assignor of one-third to Virgin H. Lockwood, Indianapolis, Ind. Filed Mar. 4, 1912. Serial No. 681,405. (Radiator shield.) 3 claims.

1,069,182. Differential Speed-Changing Mechanism. Frank I. Remy, Benjamin P. Remy, and Arthur Berger, Anderson, Ind., assignors to Remy Brothers Company, Anderson, Ind., a Copartnership. Filed Dec. 13, 1912. Serial No. 736,524. (Friction mechanism.) 13 claims.

1,069,199. Steering Device. Arnold M. Squire, Cleveland, Ohio. Filed Mar. 29, 1912. Serial No. 687,151. (Screw-and-nut steering gear.) 1 claim.

1,069,239. Pneumatic Tire. Rally Ehle and Rex Ehle, Council Bluffs, Iowa. Filed Mar. 26, 1912. Serial No. 686,347. (System of fabric building.) 3 claims.

1,069,279. Motor Vehicle. Morris Moskowitz, Montclair, N. J. Continuation in part of application Serial No. 700,429, filed May 29, 1912. This application filed Dec. 18, 1912. Serial No. 737,484. (Power plant mounting.) 3 claims.

1,069,313. Demountable Tire Rim. Bert C. Ball and Lewis E. Younie, Portland, Ore. Filed Feb. 20, 1911. Serial No. 610,595. (Split rim and fastening lugs.) 6 claims.

1,069,334. Vehicle Frame. Gise H. Humphrey, Wilkinsburg, Pa. Filed Apr. 11, 1912. Serial No. 689,954. (Shock-absorbing suspension system.) 2 claims.

1,069,349. Demountable Rim. Frank Spranger and Nicholas M. Spranger, Detroit, Mich. Filed Jan. 11, 1912. Serial No. 670,683. (Rim with screw-and-wedge fastenings.) 3 claims.

1,069,365. Pneumatic Tire. Benjamin Wlademarowitsch Wittenberg, Riga, Russia. Filed Sept. 11, 1912. Serial No. 719,820. (Rivet-studded tread.) 2 claims.

1,069,410. Spring Wheel. Simon Gordon, Washington, D. C. Filed Jan. 22, 1913. Serial No. 743,681. (Spring-cushioned hub.) 5 claims.

1,069,427. Means for Controlling the Escape of Fluid from Tanks. Allan G. Hurdman, Denver, Colo., assignor of one-third to William S. Iliff, Denver, Colo. Filed Aug. 8, 1910. Serial No. 576,238. Renewed June 22, 1912. Serial No. 705,310. (Gasolene tank shut-off valve and adjustment.) 7 claims.

1,069,432. Internal Combustion Engine. Felix Jorwich, St. Paul, Minn. Filed Feb. 27, 1912. Serial No. 680,357. (Piston with extension sleeve for uncovering and covering ports.) 5 claims.

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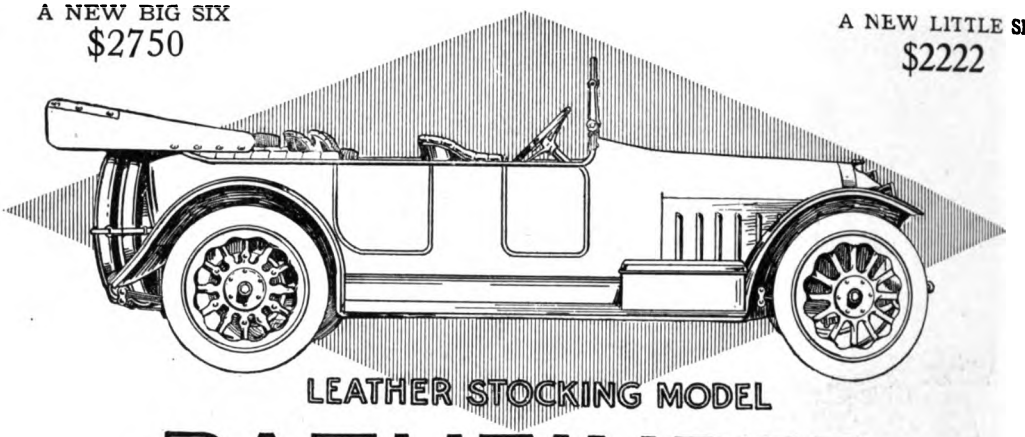
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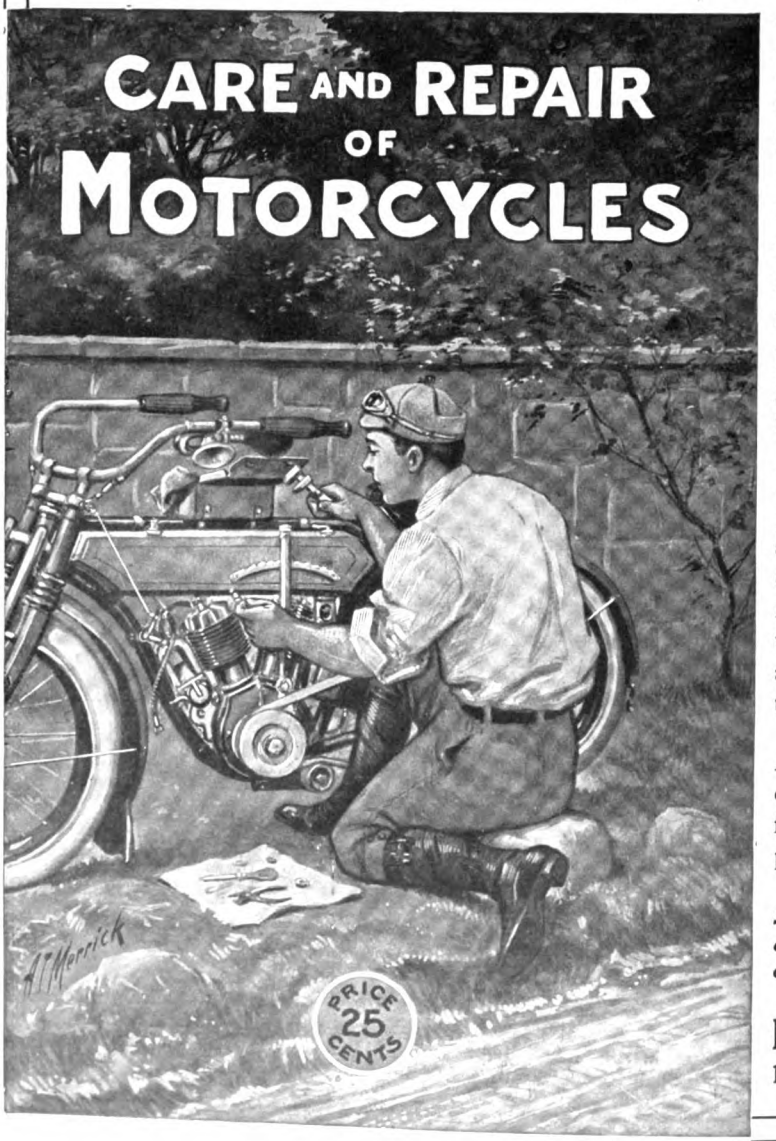
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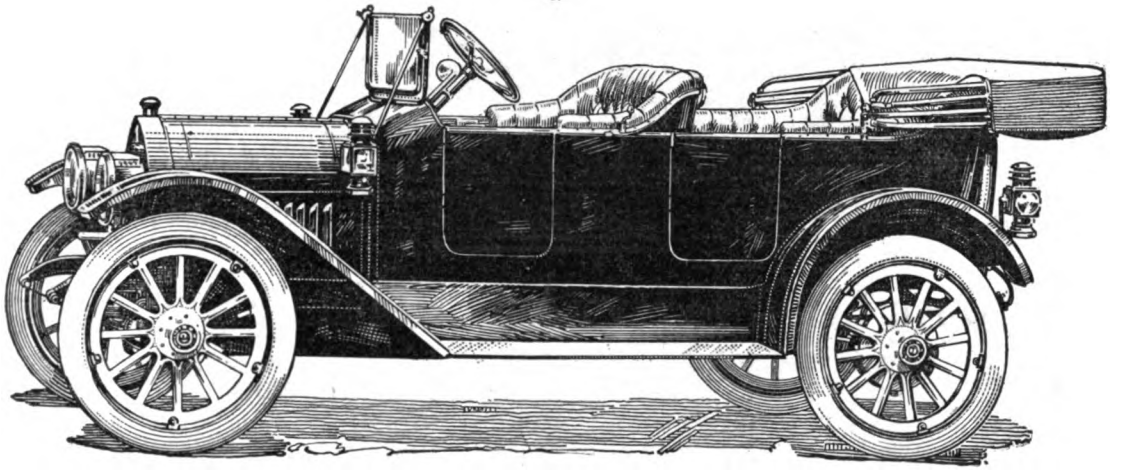
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CAN YOU NAME MORE THAN ONE (priced under $900) which equals in performance any $3000, $4000 or $5000 car in the market?
The Chevrolet "ROYAL MAIL" and "BABY GRAND" enjoy this distinction.

CAN YOU NAME MORE THAN ONE (priced under $900) that in mechanical detail, excellence of finish and easy-riding qualities, is equal to any $3000, $4000 or $5000 car in the market?
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Look at the size of the pinion gears and the thickness of the ring gears in the differential and the size of the axle shaft of the Chevrolet "ROYAL MAIL" and "BABY GRAND."

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The New York Factory of the Chevrolet Motor Company is located at 57th Street and 11th Avenue, four blocks from Broadway, in the heart of New York City.

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The Chevrolet Motor Company requires a deposit of only $200 on any contract, regardless of size.

CAN YOU NAME MORE THAN ONE concern building a car (priced under $900) which gives its dealers a uniform discount of 20%?
The Chevrolet Motor Company has but one discount. The Chevrolet "ROYAL MAIL" Roadster lists at $750. The Chevrolet "BABY GRAND" Touring Car lists at $875, both beautifully finished and wonderful performers.

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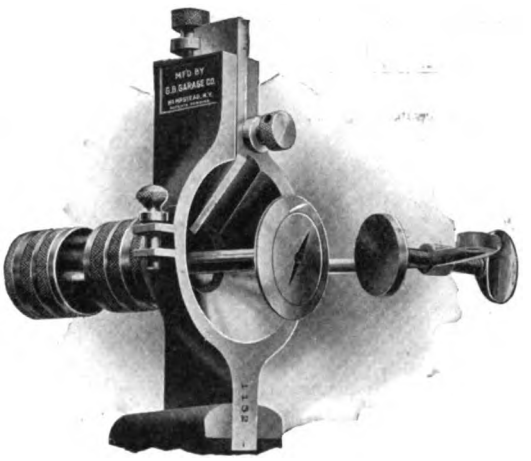
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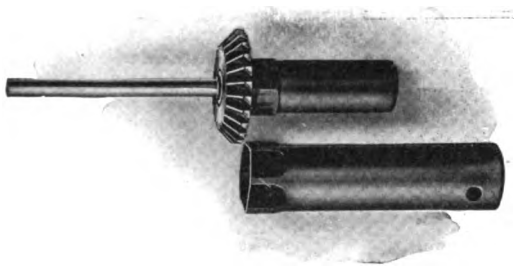
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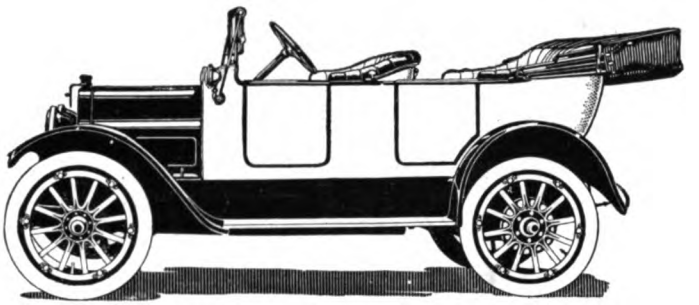
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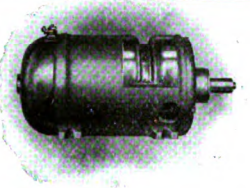
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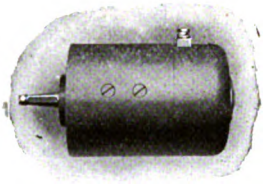
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¶ If the starting-lighting system halts or hesitates, if it lacks power, the service-value of the car diminishes in proportion.

¶ You can look at the question from any angle, but you come right back to power and efficiency on the part of the starting-lighting system and if the system will NOT deliver these requisites —the car is sadly handicapped no matter what it cost.

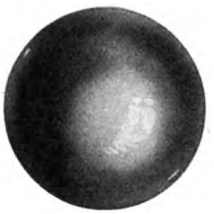
¶ Leading automobiles in each price class carry the Gray & Davis equipment.

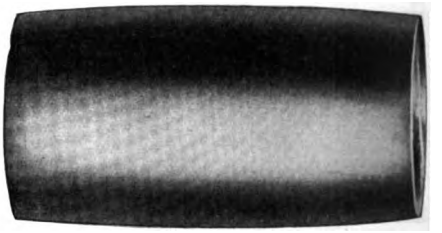
Write for Catalog

GRAY & DAVIS, Inc., Boston, Mass.

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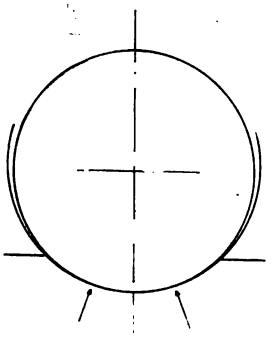
CAPACITY
GURNEY
ENDURANCE





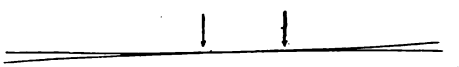
When the Ball Becomes a Roller

¶ The real meaning of the Gurney 4% Raceway may be made very plain if we take the diagram of a ball resting in a curve of 4% greater radius, straighten out the race curve until it becomes flat, and then increase the diameter of the ball circle until it bears the same contact relation to the straight line that the ball originally bore to the 4% race groove. This diagram shows graphically what is the advantage gained by this sort of raceway.



¶ The roller bearing makers elongate and straighten out the ball into a roller in the effort to get more contact. We close up the raceway close to the ball to accomplish the same end. We realize as much in getting ample supporting contact surface and we avoid the difficulties inherent in all roller bearings consequent upon the necessity of maintaining alignment, and retain the advantages of the simplicity and low friction of the ball roller.

¶ A ball in a 4% race groove gets about the same degree of contact that one twenty-five times as large gets on a flat surface. The physical equivalent of a ball in a 4% raceway is not a ball twenty-five times as large, but a barrel-shaped roller having the same diameter as the ball and a crowning or bulging surface, the radius of the crown being twenty-five times the radius of the ball. Such a roller will support just twenty-five times as much as the ball on a flat surface. That is, the advantage of the 4% raceway is to multiply the supporting capacity of the ball by something like twenty-five. Or, one row of balls in a 4% raceway will hold up as much as 25 rows on flat raceways.



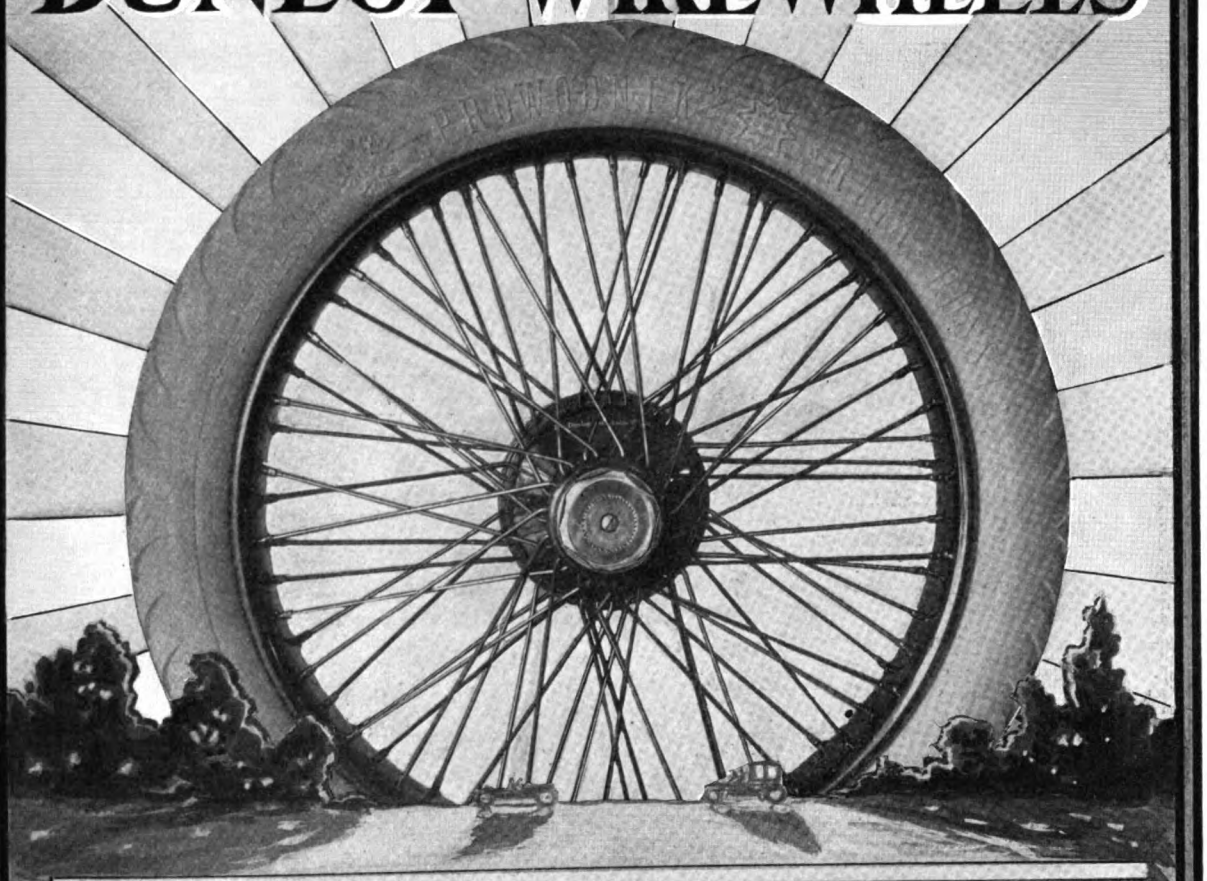
¶ This affords some explanation of our insistent emphasis of race contour. It also partly explains why the alleged greater capacity of the roller bearings, which their advocates so vociferously claim, is not in evidence in actual service.

The Balls Are Better Rollers Than the Rollers, Especially When They Roll In Gurney Raceways

GURNEY BALL BEARING COMPANY, Jamestown, N.Y.

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The Dawn of a New Era
DUNLOP WIRE WHEELS



Dunlop Detachable Wheels

Standard Equipment On Europe's Best Motor Cars

Rolls-Royce, Minerva, Panhard, Clement, Argylls, Armstrong-Witworth

Guaranteed Five Years

Exhibiting At New York and Chicago Shows .

DUNLOP WIRE WHEEL CORPORATION
2130 Broadway, New York

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SPRINGFIELD Convertible Bodies



The folding method of glass storage not only gives greater protection to the glass but obviates any of the discomforts due to possible warping common to sliding windows.

SPRINGFIELD CONVERTIBLE BODIES are the most practical of the many types developed for various phases of automobile usage. They combine, in one unit, the protection and shelter of a closed car and the freedom of an open touring body. The change from one to the other can be made in a few moments. These paramount advantages are accomplished only in the Springfield Convertible Type Body.

Our facilities for the production of the convertible type body are ample to meet the demands of motor car manufacturers who are shrewd enough to foresee the extended market for their cars equipped with a single body possessing every one of the merits heretofore restricted to the man with resources sufficient to afford two cars or at least two bodies, interchangeable on the same chassis.

Contrary to what might be expected, and with good reason, too, for seldom do extreme practicability and good design combine well, Springfield Convertible Bodies make a superb appearance. They are the embodiment of the very finest of the coach maker's are and are unexcelled by any product of the American or European body builders.







AT EVERY STAGE OF THE CONVERTING PROCESS THE VARIOUS UNITS OF THE TOP AND WINDOW STRUCTURE SLIP INTO PLACE NEATLY AND READILY

Digitized by Google

SPRINGFIELD *Convertible* *Bodies*



After the windows are folded and stored away the top will come down into a neat shape ready for boot or slip covering.

OUR undisputed standing as the pioneer makers of metal bodies in this country, guarantees our statement that these bodies are absolutely practical and long past the experimental stage.

As a matter of special interest to those who make and sell American or imported cars, we are prepared to furnish estimates and specifications for single orders or in quantities, the only information required being a chassis blue print and a few measurements.

So general has become the demand for convertible bodies that we are prepared to enter into an arrangement with dealers upon virtually the same basis as that upon which the sale of complete cars is carried on.

Invariably the sum of profit on a chassis plus the profit on a Springfield body is greater than the profit on the sale of a complete car.

Not only will our proposition prove interesting to you from the financial side but the convertible type body will remove the objection many possible buyers raise—"Year around use requires two cars, closed and open, or two bodies for summer and winter conditions."

Springfield Metal Body Company

SPRINGFIELD, MASS:



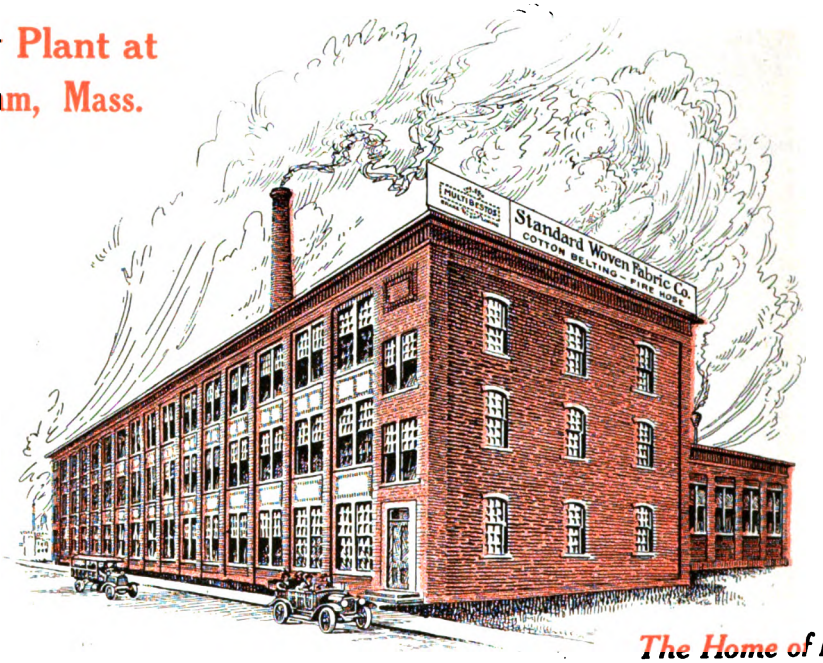




THE DESIGN OF SPRINGFIELD CONVERTIBLE BODIES PROVIDES MEANS OF SECURING THE PROPER BRACING AND TIGHTNESS TO PREVENT RATTLE OR STRAIN OVER ALL KINDS OF ROADS

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Our New Plant at Framingham, Mass.



The Home of Multibestos

OVER a year ago, the increasing demand for Multibestos Brake Lining forced us to extend our facilities of production. To meet this growing demand we made a clean sweep of the situation by building a new factory and equipping it with looms and machinery which our Engineering Department had been developing especially for the manufacture of Multibestos. With this new factory and equipment we will make and sell five million feet of brake lining during the coming year. Not only have we increased our capacity but we have improved our quality as well, and our new factory and equipment have enabled us to extend the scope of our products to include clutch facings and friction bands in any special form or size.

Constant Reliability

In the long run any product which has superior merit is bound to dominate its field, price notwithstanding.

With brake lining, for instance, constant reliability is the crux of the whole situation; the brake lining having this feature in the greatest degree is not only the lining of superior merit, but is the only brake lining fit to use where human safety may depend upon its reliability.

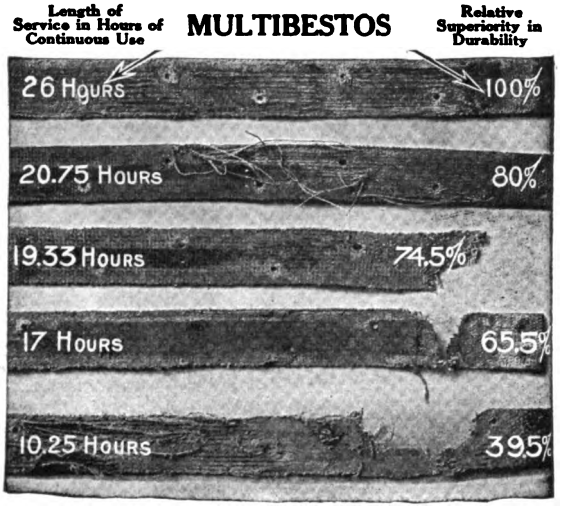
Regardless of how other brake linings are made—a matter, by the way, which can be determined exactly—the design or the plan on which Multibestos is made provides for the use of materials best adapted for brake linings. Only the purest of long fibre asbestos and brass wire are used. In the first place, these materials are the best that the market of the world affords; they are tested for their strength and uniformity; and after it is proved that in quality they come up to certain high standards, they are firmly and closely woven into a solid fabric which has no layers or plies or stuffers which can pull apart or become separated.

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Long experience in treating and waterproofing mechanical fabrics has enabled our experts to produce a compound for treating the asbestos fabric which adds greatly to its natural vitality and frictional qualities. By our own method of treating, this compound permeates every fibre of the fabric. A special process gives a smooth, even, contact surface, unchanging and non-glazing which will not granulate even under the most severe conditions. There is absolutely no chance for Multibestos to crack or develop uneven surfaces. It is heat proof, dust proof, oil proof, water proof and neither grease nor gasoline has any effect upon it.

Multibestos will neither char or burn with the heat of friction, nor will it soften or harden. It will stand the most severe pressure and will not injure the brake drums, and however great the friction, the resulting heat will not create the slightest disagreeable odor. Multibestos can be machined readily, taking a countersink as easily as metal or wood. The very homogeneity of the fabric gives it the body to hold rivets perfectly. In action Multibestos grips the drums without jolt or jar. It sets quickly with slight pressure and stops the car no matter how fast it is going; in emergencies locking the wheels instantly.

Below is shown the results of a series of brake down tests conducted at the Worcester Polytechnic Institute.



The truths brought out by the test need no elaboration for it is quite clear that if you are looking for 100% efficiency—if you want the cars you sell equipped with brakes of constant reliability—you should specify Multibestos and insist on having no other.

At the Shows

We will have a mechanical exhibit in which we will back our every statement with substantial proof. Don't miss seeing it.

At New York, Grand Central Palace, Fourth Floor, No. 175
At Chicago, The Armory, No. 29
At Boston, Mechanics Bldg., No. 448

STANDARD WOVEN FABRIC COMPANY

Framingham, Mass.

SALES BRANCHES

Boston—F. S. Boyd, 903 Boylston St.
Chicago—F. E. Sparks, 1430 Michigan Blvd.
San Francisco—Fred Ward & Son, Inc., Cor. First and Howard Sts.
New York—C. D. Schmidt, 276 Canal St.
Philadelphia—N. A. Petry Co., Inc., 1427 Vine St

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Hand Made

Kelly-Springfield

Automobile Tires

SOMETIMES it takes months, sometimes even years, for a motorist to come around to buying Kelly-Springfield Tires. That's because some people have more patience than others.

Kelly-Springfield Tire Co., Cor. B'way & 57th St., N.Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmsted & Son, Syracuse, N. Y.

Southern Hardware & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto

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Push Button and Cable Attachment

MOTOPHONE

Mechanically Operated

The Greatest Sensation in Auto-Horn Industry

Operated exactly the same as an Electric Horn EXCEPT

NO Adjustments Motor Troubles

NO Battery Expense Electrical Wiring

Just push the button (the same as in a Motor Horn) and a loud, continuous blast is emitted—as powerful as any warning signal made.



REMEMBER

The First Cost is The Last Cost

Guaranteed for *Two* Years

The **Cable Attachment** of the Motophone has been devised and perfected to offer to the trade a mechanical horn having all the characteristics of motor driven (electrical) horns **without** the care of the electric motor, the cost of maintenance, adjustments and the numerous petty annoyances to which the user of the motor horn is subjected.

Its Action is Positive, Instantaneous, Certain at All Times

The Motophone is made in five models as follows:

Type A (Torpedo), 11" $12
Type B (with Oval Bell), 9" . . . 10
Type C (for Motorcycles) $8.00
Type D (with Cable Attachment), 11" $15
Type E (with Cable Attachment), 9" 12

Automobile Supply Manufacturing Company

220 Taaffe Place INCORPORATED 1904 BROOKLYN, N. Y.

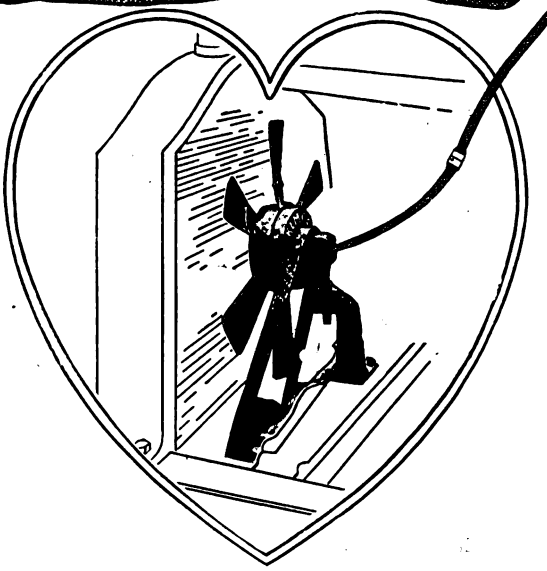
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Kemco

FAN-TYPE

GENERATOR

The Only Generator Which Can be Put on Your Car Without Excessive Expense for Installation or Loss of Time



Owners

You can now add electrical equipment to your car and be sure that the part most essential is electrically and mechanically RIGHT. Its installation adds very little weight. Uses only ⅛ H. P. more than your fan. It makes good in service. The Kemco gives you more for each dollar invested than any other system on the market.

Dealers

Here is a real proposition for YOU. Owners of cars want electrical equipment but they don't want to tear down their cars to install it—the Kemco solves the problem.

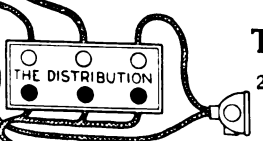
We can furnish the Kemco at a price mighty attractive to the car owner and yet pay you handsomely for acting as our agent.

Better write us about it.

The Source of Supply
The Heart of the Electrical System

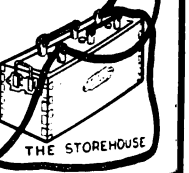
Be sure to visit our EXHIBIT—Space D 106-A, 4th Floor, Grand Central Palace, NEW YORK
SHOW—Space 178 and 179, 2nd Floor, Coliseum Annex, CHICAGO SHOW

Cut the heart out of this ad and send it to us when making inquiries regarding the Kemco.



THE KEMCO ELECTRIC MFG. CO.

2227 Ashland Road Cleveland, Ohio



(11)

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The Printing of this Big Issue of Motor World

was done by the

Mail and Express Job Print

9-15 Murray Street, New York

An organization and plant noted for efficiency.
Night and Day Operation.

The Value of Your Printing

depends upon the number of sales it produces.

¶ Perhaps you have wondered why certain catalogs or circulars did not sell more goods.

¶ They may have been beautiful pieces of work—but the ***Selling Germ*** was lacking.

¶ We have put the ***Selling Germ*** into many a piece of printed matter and can do the same for you. ¶ Consult our "Idea Man."

Mail and Express Job Print
9-15 Murray Street, New York
Telephone, Barclay 5940

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BOOTH BRAND

Shipment Guaranteed on Day Ordered





"Shoddy"



"Booth Felt"



What kind of service can be expected from washers which can be pulled to pieces with the fingers? Try to do the same thing with Booth Quality Washers.

The way we conduct this business is appreciated by our customers in the automobile industry quite as much as the quality of Booth Felt Goods.

We never insist upon holding manufacturers to contracts when conditions arise to make strict adherence to delivery specifications impracticable, nor do we trump up claims for goods made up on contract and not actually shipped. With our facilities we can wait until three or four days of delivery dates before making up an order, and in so doing we protect ourselves and the manufacturers as well. In all the years we have been furnishing several manufacturers with all their requirements in the line of felts, this has been our policy, and it is worthy of special note that we never have missed a scheduled delivery.

No order possibly could be given which we could not make up and ship on the same day it is received, if necessary.

N. E. BOOTH, 642-44 Pacific St., Brooklyn, N. Y.

THE BOOTH FELT CO., Ltd., Gananoque, Ont.

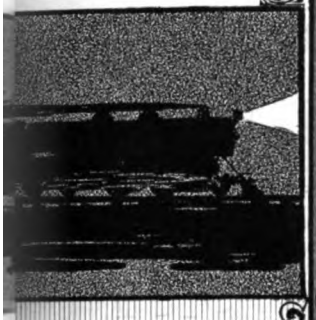
Quality remains long after price has been forgotten

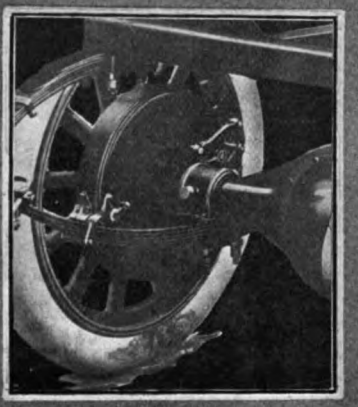
Booth FELT WASHERS

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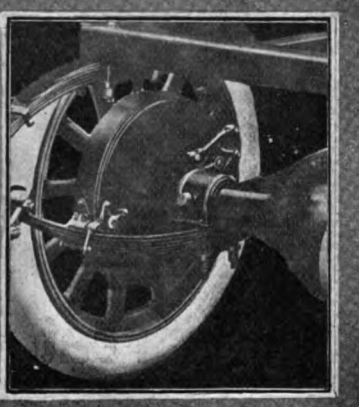
FELT GOODS

Shipment Guaranteed on Day Ordered





"Shoddy Used"



"Booth Felt Used"



This is the final test. Shoddy quickly grinds to pieces when used as rear axle grease retainers. Booth Felt is the only material that will stand up.

Ability to deliver the goods on schedule has become a matter of pride with us. We keep a stock of about thirty thousand dollars' worth of special felts on hand, each numbered so that a customer can duplicate an order without samples to order from.

Booth Automobile Felts are cut exactly to blue print dimensions. Our equipment of dies is probably the most complete in existence. Our preparedness for large or small orders, however rigid the delivery, never makes it expedient even to think of substituting cotton mix felts for wool goods. Our integrity in all business dealings has won for us the confidence of manufacturers of almost every high grade car in the country.

Booth Felts are used for:

Washers of every size for hubs, rear axle grease retainers, steering gears, speedometers, carburetors, and for every other purpose where a washer is needed in a motor car assembly; strips for radiator cushions; squeak preventative between chassis and body; strips for sashless limousine windows; bumpers; plugs and washers for magnetos; oiling wicks for spring bolts. We also make all kinds and shapes of gaskets without expensive dies.

N. E. BOOTH, 642-44 Pacific St., Brooklyn, N. Y.

THE BOOTH FELT CO., Ltd., Gananoque, Ont.

Whatever the use Booth Quality is economy

Booth
FELT WASHERS

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WHY

should a device which was adopted as an economy over the castellated nut and cotter—and in its proper form gives a greater efficiency—be subordinated to such an extent that its efficiency is practically lost?

We refer, of course, to the NUT LOCK WASHER situation. Do you know about it? How is it affecting the cars you make? It IS affecting them one way or the other. Which way? Do you know? Do you want seme first-hand information?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

We should like to send to all those interested the complete series of our last year's advertising

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Magnetic vs. Centrifugal } Speedometer Service

Stewart-Warner Service

Car Owner: (entering a Stewart-Warner Service Station located in all large towns and cities): I have just taken my car out of storage, and I would like to have my season odometer set back to zero. I would also like a large gear changed as I have put on oversize tires.

Manager of Service Station: Won't take but a few minutes; delegates trained mechanic to set back odometer and another to install the new gear. Job completed in a very few minutes. Car Owner leaves remarking, "That's real service." He's pleased with his car, and gives the manufacturer credit for having selected accessories backed by such real service.

"Other" Service

You've sold me a car for the last time. When I gave you the order I liked the car so well that I never questioned the accessories on it. I thought they would surely be the equal of the car.

I have just got back from a long tour and am disgusted with my Centrifugal Speedometer. First, I put on oversized tires and tried all over this big city to get a correct sprocket to take care of this change of tires. I find the makers of this Centrifugal Speedometer have no service station, so I had to start out with the old gear on the wheel, which was all the while indicating wrong mileage and speed. Hadn't gone far before we had an accident which, with other damage, broke the speedometer shaft. Was able to get the other work done in the first garage, and expected to pick up a speedometer shaft in the next big town, but no one carried them. It was the same story in every town I visited. They all offered to sell me material for a "Magnetic Speedometer," but I told them mine was Centrifugal. I also found a lot of service stations that could do any class of work on Magnetic Speedometers, but they carried no parts for Centrifugal instruments. Much to my disgust, I completed the trip without the use of my speedometer. Now, what will I do about this shaft, and where will I get a new sprocket?

Car Dealer: I guess you will have to write to the manufacturers of your Centrifugal Speedometer and send them your old shaft. It will probably take another week or more before you get it on your car. I am sorry that in the meantime you will be without any speedometer or mileage record.

Car Owner: Why don't your factory use a Stewart-Warner Magnetic Speedometer? I could have gotten service in any city I went through. They seem to be the only people doing a big enough business to run real service stations. I have also been reading a lot of car advertisements lately and I note that nearly every car is equipped with a Magnetic Type instrument.

Car Dealer: Well, when I heard that my factory was going to use the Centrifugal Speedometer I begged them to equip with a Magnetic Type speedometer—we would then not have to "explain." I guess the real truth is that they were able to save money in buying the Centrifugal Speedometer. They have promised, however, that next year they will use the Magnetic Type Speedometer and other first class accessories throughout, which will be the equal of our car. If they don't, I am going to get the agency for some other car, for I am not going to lose you and other good customers.

NOW—WHICH SERVICE DO YOU WANT?

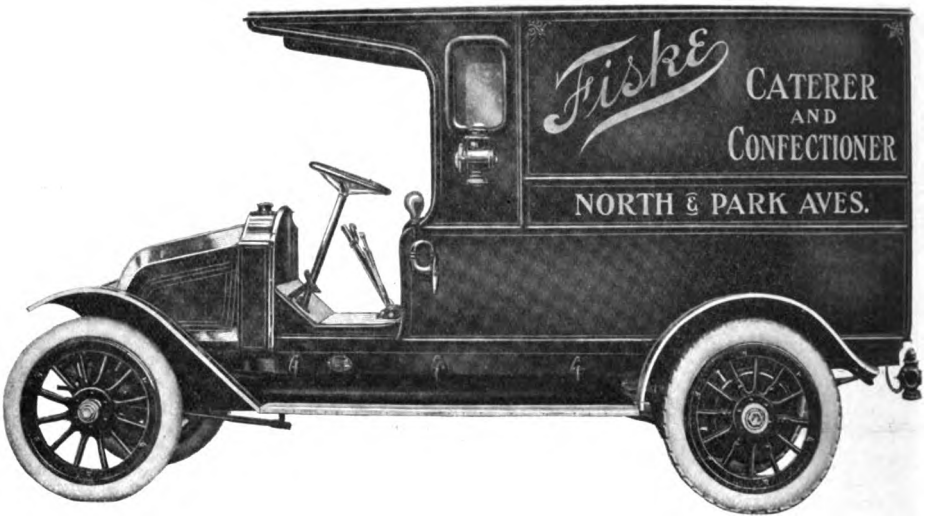
Stewart-Warner Speedometer Corporation, Factories: Chicago, Illinois Beloit, Wisconsin

Sole manufacturers of the magnetic speedometer

17 branches and nearly 100 Service stations in all principle cities

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Delivering the Goods In More



IN more than 60 lines of business Stewart Delivery Trucks are serving daily—and delivering the goods. They are doing it in scores of American cities, in Canada, in South America. They are proving their economy on the level streets of New York, of Buffalo, of Los Angeles; in the hilly sections of Albany, of Montreal, of Baltimore.

To be used in more than 60 different lines of business is a record unusual in the light delivery field. It is a record uncommon for a delivery vehicle that is built on one model of chassis.

Here are some of the businesses where the Stewart is making good:

Bakers	Grocers
Banks	Hardware
Butchers	Ice Cream
Caterers	Laundries
Cigars	Liquor Dealers
Department Stores	Mail Service
Dyers and Cleaners	Newspapers
Fire Departments	Park Commissions
Fish and Game	Provisions
Florists	Street Railways
Furniture	Telephone

Promptness and Prestige

Each of these businesses requires a light truck that covers the ground quickly—covers a lot of ground—and "gets there" on time. In each the satisfied customer is important.

Consider, too, the prestige that attaches to the merchant who operates a Stewart—or a fleet of Stewarts, depending upon how extensive are the particular hauling requirements. To operate a Stewart stamps the owner as alert, progressive, quick to adopt improved methods. Outward appearances count for much.

Quick delivery makes for popularity just the same as the courtesy of clerks. A good looking delivery truck wins favor and gains attention just the same as an attractive show window.

Stewart
Delivery Trucks

A Direct Corner-Cutting Method

Rapid delivery is the same sort of utility as the telephone, the cash register, the adding machine. It saves time and labor—and it reduces the cost of hauling. It is a corner-cutting device. And the most direct method is always the best method.

The Stewart is a good truck for the dealer to handle, just as it is a good truck for the merchant to buy. It affords a wide range of activity. It can replace two horses at a smaller cost in hauling. It can replace four horses at less than one-half the delivery cost.

Big Stewart Features

30 horsepower Continental Motor, 3¾ inch bore by 5¼ inch stroke.

Timken Axles, front and rear.

Brown-Lipe Selective Transmission.

Multiple Disc Clutch, proven best for light trucks.

Bosch Magneto, no batteries, no trouble.

Gemmer Steering Gears.

Up-to-date improvements, such as foot accelerator, dash adjustment for carburetor, left-hand drive, etc.

Every unit accessible and easily removable.

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Than 60 Lines of Business

Six essential features provide in the Stewart a staunchness and ruggedness uncommon among light delivery trucks. These features combine to make the Stewart "stand up" in the face of severe service over all sorts of roads and under all weather conditions.

These features make the Stewart a truck of long life, of economy in operation.

These features have been developed to a high point of perfection through the experience of the men who have designed the Stewart, and the skill of the men who build it.

You owe it to yourself, as a dealer or as a merchant, to consider these features —in choosing a light delivery truck to handle, or in choosing a light delivery truck to purchase.

Stewart
Delivery Trucks

SIMPLICITY — As applied in the Stewart, simplicity makes for the elimination of unnecessary parts in design. It means the absence of complications in construction. Thus, the Stewart is easy to operate. A horse driver can quickly learn how to drive a Stewart. Easy to care for, too —a mechanic's knowledge is not compulsory. There are no batteries, timer, coil, spark lever, belt-driver fan or other complex devices to get out of order.

UNIT DESIGN—However perfected it may be, any piece of mechanism may sometimes need adjustments or repairs. In the Stewart the important parts are designed in separate units—and so placed and supported in the frame that any one can be removed and replaced without disturbing any other unit, or the load.

LUBRICATION—No consideration is more important than lubrication. It is the life of a truck. In the Stewart the motor is lubricated automatically. Other parts are fitted with large grease cups, conveniently placed on the outside of the frame and accessible to the driver. The Stewart requires a minimum amount of lubricant.

ECONOMY—In every feature that makes for economy the Stewart excels. The motor is comparatively small, with long stroke, very quiet and extra powerful—all tending to a lower consumption of gasoline and oil and a minimum vibration. By making a gear reduction of 5 to 1 in the rear axle, the motor has practically the same weight-moving ability as an engine twice its size with the ordinary touring car reduction. Notable in the Stewart also are the bearings, crank shaft and cam shaft of generous size.

STRONG AXLES—The axles used in the Stewart are of the most modern construction, and of the highest quality known. They are good for years of service with a minimum of attention. The axles are of unusual strength and wearing qualities. We have adopted the shaft drive rear axle, thus eliminating many parts, requiring less power from the motor, doing away with replacements of chains, and gaining silence and smoothness in operation.

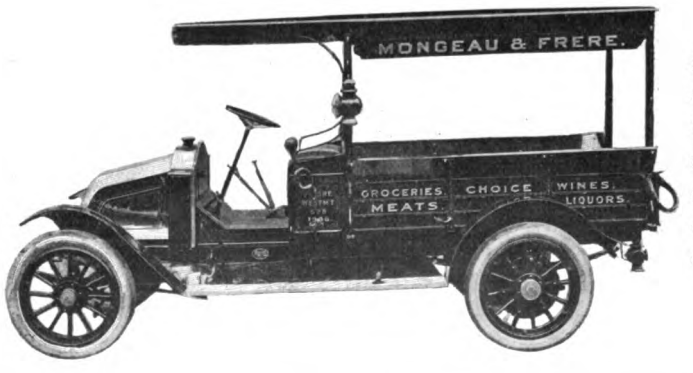
QUALITY OF MATERIALS—Not only is the Stewart design logical. Not only is the car built with unusual care. What is equally important, the materials that go into the Stewart are the highest quality—for upon the quality of materials depends largely the life of a motor truck. The materials used in the Stewart must measure up to Stewart standards—and are particularly selected with these standards in view.

Prices F. O. B. Buffalo

Chassis	$1500
Panel Body, Model A	150
Express Body, Model B	125
Open Express Body, Model C	125
Stake Body, Model D	125
Wire Screen Express, Model F	150

STEWART MOTOR CORPORATION, Buffalo, N. Y.

T. R. LIPPARD, Pres. and Gen. Mgr. **R. G. STEWART, Vice-Pres. and Ch. Eng.**
R. P. LENTZ, Sec. and Treas.

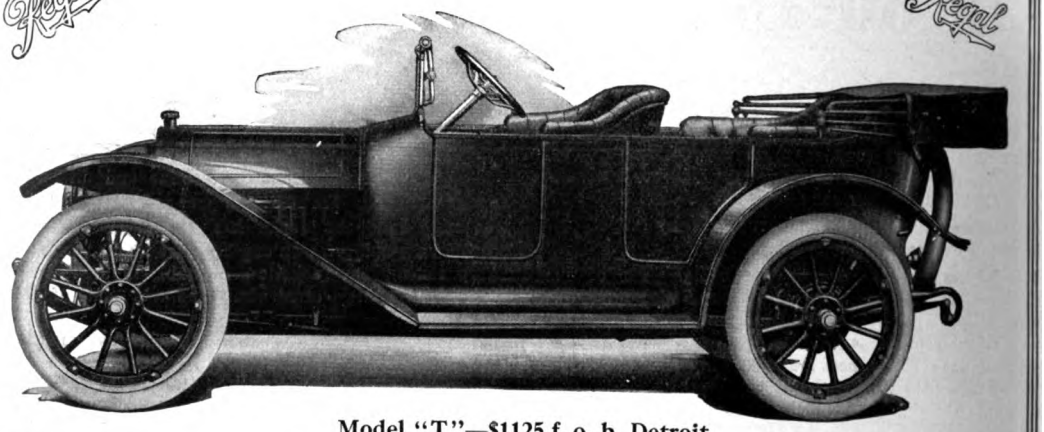


Separate and distinct from any other truck company using our names or the name of our officers

If you are a dealer, kindly so indicate below and get information about our opportunity for dealers.

Mail This Coupon Today.
STEWART MOTOR CORPORATION,
Buffalo, N. Y.
Please send your catalog of Stewart Delivery Trucks.
Name.....
Address.....
City and State.....

Digitized by Google



Model "T"—$1125 f. o. b. Detroit

WHY REGAL?

ALL MODELS

REGULARLY and properly equipped with Rushmore Electric Starting and Lighting system, including headlight dimming attachment. Other important new selling features including left side drive and center control, and—of course fully equipped including "handy" curtains in high-grade top,

Built and backed for years by a Company of known financial strength in a million dollar plant, located in the heart of Detroit, the Automobile Trade Center of the world,

Sold by progressive distributors wherever automobiles are used the world over, under contracts that provide for liberal support from the manufacturer. Some territory open. More of it open for improvement. At all the leading shows. Better write for appointment.

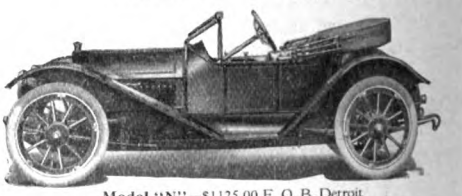
Regal Motor Car Co.

264 Piquette Ave. DETROIT, MICHIGAN



Model "C"

Overhung Five Passenger Touring Car—$1350.00 F. O. B. Detroit. Wheel base, 116 inches. Motor, four cylinder cast en bloc; bore, 4 inches; stroke, 5 inches. Dual ignition. Cooling, thermo-syphon with fan. Selective sliding gear transmission, three speeds forward and reverse. Cone clutch with leather face. Steering, left hand, center control. Tires, 34x4 inches. Demountable rims.



Model "N"—$1125.00 F. O. B. Detroit



Model "NC"—$1600.00 F. O. B. Detroit

SPECIFICATIONS "T"-"N"-"NC"

Motor, four cylinder cast en bloc; bore, 3¾ inches, stroke, 4½ inches. Dual ignition. Cooling, thermo-syphon with fan. Selective type sliding gear transmission. Leather faced cone clutch. Steering left hand with center control. Demountable rims.

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Red Head Priming Plug



$1.25

The RED HEAD Ford Special Priming Plug is the logical evolution of the successful long body RED HEAD Ford Spark Plug.

There never was a real Ford priming spark plug until the RED HEAD was placed on the market—the demand for Red Heads proves it.

The porcelain is guaranteed not to crack from heat—the points will not fuse—carbon cannot choke the firing chamber—will not lose compression—the long steel body overcomes the recess in the cylinder head of the Ford motor and renders the plug accessible and safe to handle with any wrench.

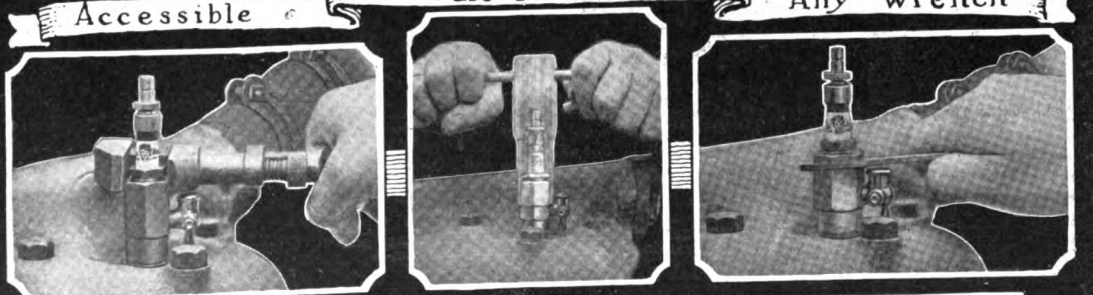
Service also guaranteed—money back from the dealer if RED HEAD Priming Plugs disappoint you.

One set of RED HEAD Wrenches free with every set of four RED HEAD Plugs.

PATENT NOTICE TO THE TRADE

The manufacture of RED HEAD Priming Plugs is licensed under patents dated January 30th, 1900, March 23rd, 1909, and the Canfield patent.

Accessible And Safe To Handle With Any Wrench



Emil Grossman M'f'g Co., Inc.

Bush Terminal, Model Factory No. 20, Brooklyn (New York City) U. S. A.

Branches: Detroit, Mich.; London, Eng.; St. Petersburg, Russia. Stock Depots: Bremen and Hamburg, Germany.

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HAVERS SIX

Havers Dealers Are Money Making Dealers

The Havers Six-Sixty is the biggest value in the entire six field. A car that is not out-ranked in any automobile assemblage.

It is beautiful in design, rich in finish, powerful and dependable in operation.

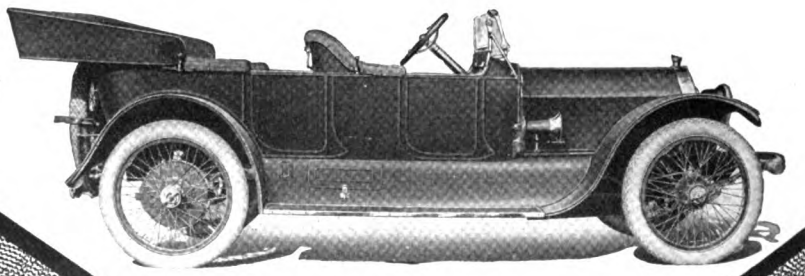
It is the most completely equipped car to be found on the market today.

It is an easy car to sell, a profitable car to handle and a wonderfully satisfying car to operate.

We will be glad to talk over the Havers proposition with responsible dealers in unoccupied territory.

Havers Motor Car Company

Port Huron Michigan



HAVERS 6-60

128-inch wheelbase — Electric Lighting and Cranking. Price $2485, with most complete equipment ever put on a car as "regular."

6-44—$1985

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A Statement by The Waltham Watch Company *regarding* Waltham Automobile Timepieces

The excellence of Waltham Watches has never been questioned and the Waltham factory is now generally accorded clear pre-eminence for extent and quality of equipment and expertness in the manufacture of fine timepieces.

Up to the time we began to make automobile timepieces ***no timepiece had ever been designed especially for automobile service.*** This may sound incredible but it is true. There were a few good timepieces ***adapted from other purposes*** on the market and a great quantity of cheap timepieces which were scarcely more than toys.

We proposed to take automobile timepieces seriously, and we designed one for that particular purpose. Now we ask that automobile manufacturers and owners also take automobile timepieces seriously, and we are starting an aggressive campaign with that end in view.

The Waltham Automobile Timepiece is the only one adjusted for temperature. It is the only one with two mainsprings, insuring a regular rate; it is the only one which will run eleven days, giving a warning signal three days in advance when it needs winding.

These are only three of many technical items but they indicate the mechanical superiority of our timepieces.

The Waltham Automobile Timepiece has been adopted for standard equipment by the Detroit Electric, Lozier, Ohio Electric, Oldsmobile, White, Winton and Rauch & Lang Electric Cars, and others.

The interests of manufacturer and dealer and owner are mutual in having a timepiece as good as their cars.

See our exhibits at the New York and Chicago Automobile Shows.

WALTHAM WATCH COMPANY
WALTHAM, MASS.

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THE ALLEN MOTOR CO. Allen FOSTORIA, OHIO

ALLEN

GREATEST MOTOR CAR

$1395---The ALLEN 40

THE Allen 40 is fundamentally correct. It is designed on sound mechanical lines. Around this has been built a car of graceful and pleasing appearance with a world of endurance and reserve power, and to these have been added the maximum of modern luxury and comfort.

AND THE LIST PRICE:

Five Passenger Touring Car, $1395
Two Passenger Roadster - $1395

With Complete Equipment

This is our second year in the automobile business. Our 1913 car was a pronounced success but we have gone way beyond it with the 1914 Allen 40. Our business is on a sound basis. The combined capital employed in the manufacture of Allen Cars and parts is considerably over $5,000,000.00. We have eliminated every unnecessary item of overhead expense in the production of our cars. That is one reason we can list the Allen 40 at $1395 and still keep our business healthy. Such an attractive price is bound to eliminate a lot of selling expense and to distance competition.

The Allen 40 at $1395 is far greater value than any other car selling at the same price, and it is lower in price than any other car equal to it mechanically or in point of appearance and refinement. There is no car at any price more up to date in details of chassis or body design, construction and equipment.

Here are the detailed specifications upon which to base your ideas of the car before you see it.

GENERAL SPECIFICATIONS

MOTOR—Allen, four cylinders, 4¼-inch bore, 5-inch stroke.

CYLINDERS—Cast en bloc.

VALVES—Nickel steel, 2 inches in diameter, operated by extra large push rods which may be easily removed. Valves enclosed.

PISTONS—Are carefully ground to size. Extra long so as to distribute the side thrust between cylinders and pistons and carefully balanced before assembly to lessen vibration of the motor.

CONNECTING RODS—Of generous "I" beam section, drop forged from special steel, heat treated.

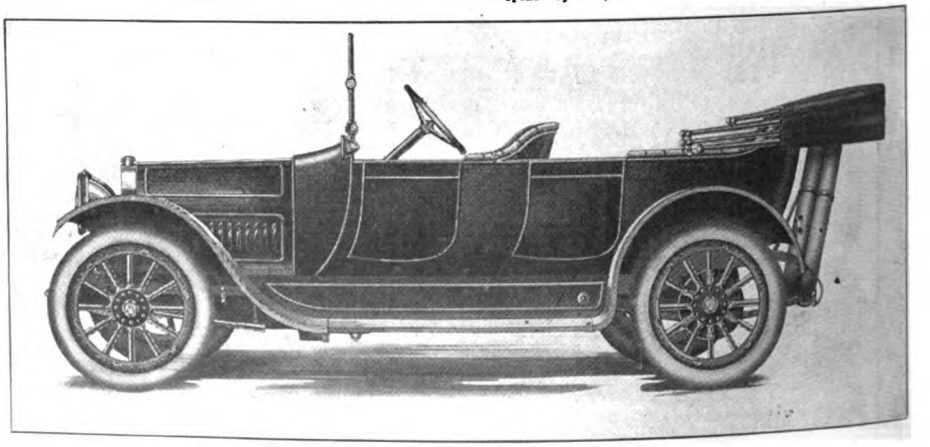
CRANK SHAFT—Three bearings, carefully balanced, of liberal size, made of best nickel babbit.

CRANK CASE—Aluminum, rigidly constructed. The upper half carries the crank shaft bearings, and the lower half can be removed without interfering with the bearings.

CAM SHAFT—Is made of special steel hardened and ground. Cams are integral with the shaft.

TIMING GEARS—Helical type to insure silent running. These gears have 1-inch face and are enclosed in dust-proof case in front of motor and run in oil.

LUBRICATION—The motor is lubricated by a constant level splash system, the oil reservoir being in the lower half of the crank



Allen 40 Touring Car. Price $1395 f. o. b. Fostoria. Ohio

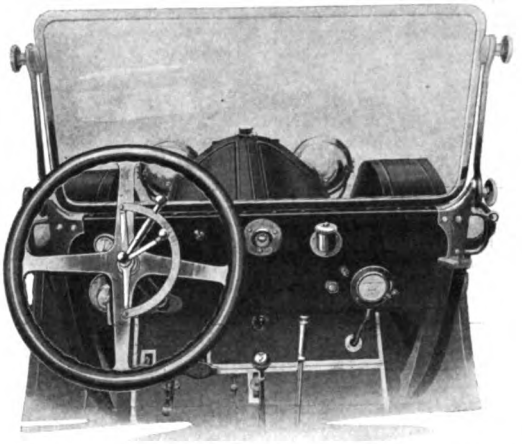
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FORTY

VALUE OF THE SEASON

THE ALLEN MOTOR CO. Allen FOSTORIA, OHIO

Challenges Competition---$1395



Centralized and Convenient Arrangement of Controls

case. A pump furnishes oil to the timing gears and to the connecting rod troughs for splash to the pistons and crank shaft bearings.

CARBURETOR—The Schebler carburetor with dash adjustment.

IGNITION—Is furnished by Splitdorf Dual Magneto.

STARTING—The motor is cranked by an electric starting motor which spins the motor at the speed of 120 revolutions per minute, which assures a positive start at all times.

GENERATOR—Is located on the right hand side of motor in front of the magneto, and driven by the same shaft as the magneto. It supplies current to the storage battery for operating and starting motor and electric lights, and it supplies current at all times regardless of the speed of the motor.

CLUTCH—Multiple disc, faced with special Raybestos friction material, driven discs steel with ground faces. This clutch should be run dry.

TRANSMISSION—Warner, three speeds forward and reverse, transmission in unit with three-point suspension motor.

DRIVING SHAFT—The power is transmitted to the rear axle through a propeller shaft and two universal joints.

FRONT AXLE—One piece drop forging from special steel, heat treated; "I" beam type.

REAR AXLE—Pressed steel, full floating with annular ball bearings. The driving gears and differential are mounted as one unit. The driving pinion shaft and differential unit are mounted on combination annular bearings. The rear wheels also are mounted on annular ball bearings. The whole load is carried in the axle housing, and not by the driving shaft. A torsion arm relieves all strain from the end of transmission shaft and universal joint. Gear ratio is four to one.

BRAKES—Two sets of internal expanding brakes all acting on the rear wheels. Brake drums 14 inches in diameter. Each brake has 2-inch face, affording a very large braking surface.

FRAME—The frame is pressed steel, heat treated. The side member channel is 4 1-16 inches high, and 2¾ inches deep, and 5-32 inch thick. The side members are narrowed in front to allow for clearance of wheels in turning, giving a short turning radius. A kick-up of 3½ inches at the rear of the frame gives ample clearance for rear axle and plenty of spring action.

SPRINGS—Front springs semi-elliptic, 36 inches long and 2 inches wide. The rear springs three-quarter elliptic, 50 inches long and 2¼ inches wide. All spring bolts furnished with grease cups.

STEERING—Is non-reversible worm and gear type, made by Warner Gear Co., with worm gear integral with the shaft. An 18-inch corrugated walnut wheel is provided with aluminum spider. Spark and throttle controlling levers on top of steering post.

GASOLINE TANK—Is located in shroud dash giving positive flow of gasoline on the steepest hills. Filler goose neck and gasoline gauge on instrument board show quantity of gasoline in tank at all times.

WHEELS—Artillery type with 1⅛-inch spokes. Twelve spokes in front and rear wheels. Wheels fitted with demountable rims.

TIRES—34 x 4, oversize 35 x 4½, furnished at extra charge.

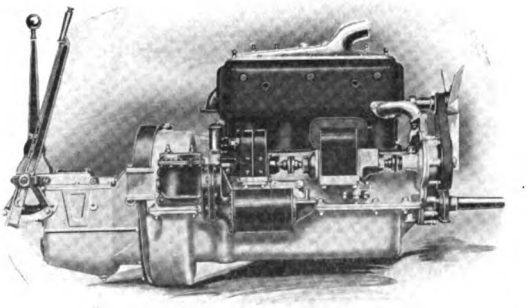
WHEELBASE—118 inches.

BODY—Five passenger, large roomy body, luxuriously upholstered with 10-inch cushions.

ROADSTER—Two passenger. Same specifications as touring car.

REGULAR EQUIPMENT—Consists of electric starter and 13-inch electric headlights, 6-inch bullet side lights, cowl light and tail light, all operated by a switch on the instrument board; speedometer, horn, Baker demountable rims with extra rim; windshield, tire irons, 34 x 4 tires, genuine Mohair top, carefully fitted; quick adjustable curtains, top boot, complete set of tools, jack, pump, tire repair kit, trouble light.

Meet us at the Shows and talk matters over with us: In the meantime write us for any particulars you may require as to territory, terms and deliveries. There is an Allen booklet awaiting your request



Four cylinder, four cycle, en bloc Motor, unit with Clutch and Gearset. Electric Starting and Lighting units housed with motor

THE ALLEN MOTOR CO., *Mfgs.*, Fostoria, Ohio

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The man who uses shock absorbers WITHOUT rebound straps



If he tightens his shock absorbers to save his springs he is nearly jolted to death—if he loosens the absorbers to make an easy riding car he may break his springs.

If shock absorbers actually performed the functions they were sold to perform, there would be no need of rebound straps.

It is doubtful if there is anybody who has ever ridden in an automobile long enough to become used to riding who does not know that shock absorbers only partially perform the function of absorbing shocks—when we say shock absorbers we mean those devices commercially practical which are generally in use today.

And please remember also that we are not speaking of equalizing springs or devices which interpolate coil springs some place in the suspension system. In the first place, most every shock absorber requires a great deal of attention and adjustment if you would get any results from it whatsoever. In addition to this fact, if your shock absorber be adjusted so as to make your car ride easy, it is so flexible that it offers little or no protection against spring breakage. In order to protect your springs you must tighten your shock absorber. If you tighten your shock absorber enough to protect your springs you make the car so rough riding as to minimize the good results of the shock absorber. There is no gainsaying the truth of these facts for they are known not only to car owners but to dealers and manufacturers as well.

As ample evidence of the truth of our statement, we have to recite only the fact that a great many of the most progressive manufacturers are adopting both shock absorbers and rebound straps in the spring equipment of their cars.

L. H. Gilmer Company,

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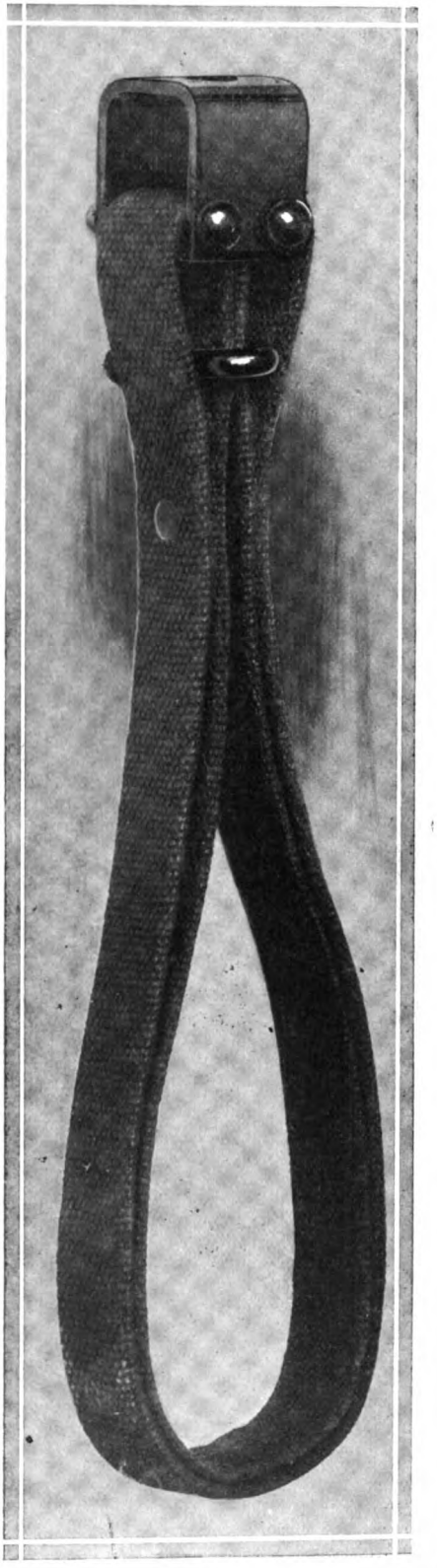
The Gilmer Rebound Strap

Rebound straps are as much an essential as any shock absorber or equalizing spring ever produced, because of the fact that no engineer has ever yet been able to devise a means of taking care of unequal loads and unequal stresses with the same set of springs. A set of springs of a certain thickness, width and length will perform certain functions under certain conditions of use. But if a car be equipped with springs dimensioned to carry satisfactorily a load, say, of 2,000 pounds, over fairly smooth roads, that same spring equipment becomes hopelessly inadequate if the load be diminished to 500 pounds. Or the reverse is equally true, if more than the 2,000 pounds, for which the springs are designed, be added. In other words, the spring will satisfactorily handle only the exact weight for which it is built under ideal conditions.

It is the truth of this statement that has made necessary the use of shock absorbers, equalizing springs, bumpers, rebound straps, etc. Without these added facilities it would be impossible to build a car the springs of which would allow enough flexibility to enable any sort of pleasurable riding—because the design of the car would have to plan on the maximum carrying capacity and maximum unfavorable road conditions. As a result, the car would be stiff and tiresome to its occupants.

Up to a certain point shock absorbers take care of these unequal conditions, but like the springs they, too, have their limitations, and it is where their limitations commence that the valuable functions of the rebound strap begin.

This advertisement is written in direct answer to a shock absorber advertisement which was a manifestly unfair, unjust knock on rebound straps. This advertisement is not meant as a knock. We are broad minded enough to come out openly and admit the desirability of the use of shock absorbers. But if the shock absorber is desirable—or in some minds even necessary—so are rebound straps necessary, and we are willing to submit our contention of this necessity of rebound straps to any board of engineers or car makers in this country or abroad.



52 N. Seventh Street
Philadelphia, Pa.

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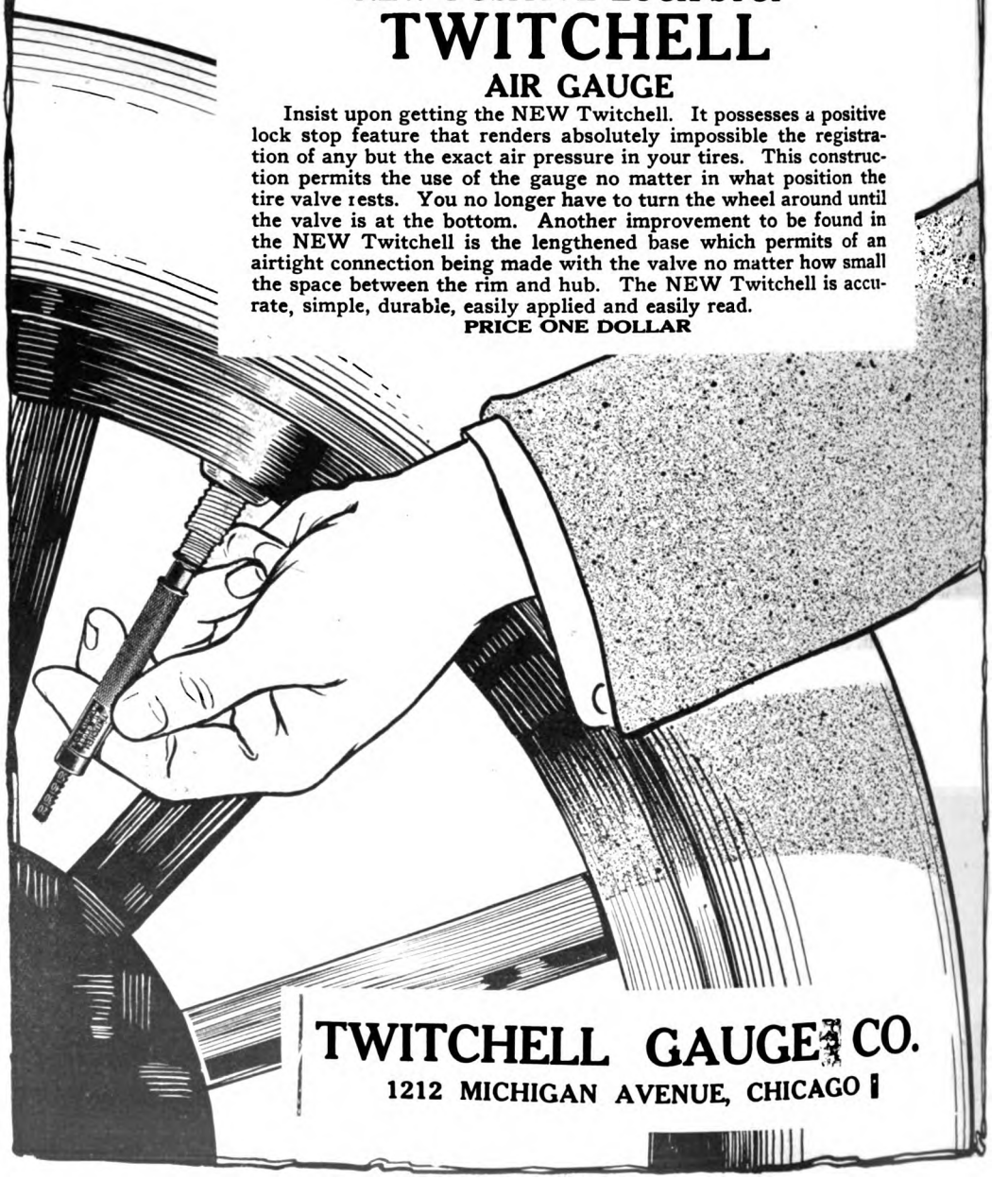
DON'T GUESS

TIRES inflated to forty pounds look and feel exactly like tires containing eighty. The only way to tell the air pressure in your tires is by means of a

NEW POSITIVE LOCK-STOP
TWITCHELL
AIR GAUGE

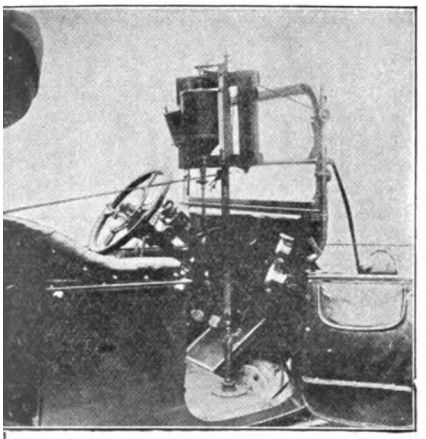
Insist upon getting the NEW Twitchell. It possesses a positive lock stop feature that renders absolutely impossible the registration of any but the exact air pressure in your tires. This construction permits the use of the gauge no matter in what position the tire valve rests. You no longer have to turn the wheel around until the valve is at the bottom. Another improvement to be found in the NEW Twitchell is the lengthened base which permits of an airtight connection being made with the valve no matter how small the space between the rim and hub. The NEW Twitchell is accurate, simple, durable, easily applied and easily read.

PRICE ONE DOLLAR



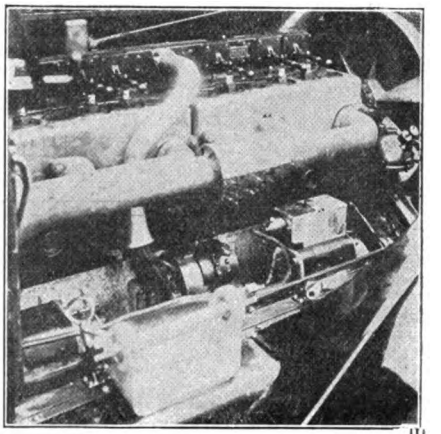
TWITCHELL GAUGE CO.
1212 MICHIGAN AVENUE, CHICAGO

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Packard equipped with auxiliary gasoline tank and measuring instrument

If it takes 5 per cent of the power of a big Packard engine to run the electric system—



Packard motor with dummy replacing generator used in no-generator test

How about YOUR car?

(From Automobile– Dec. 4, 1913)

"In a test conducted by the Packard Co., on Long Island Parkway, on Saturday, it was found that the Bijur generator, on the new 38 model, consumed from 3 to 5 per cent, of the power as represented by the gasoline supplied to the engine. These figures are of great interest at the present time in that much discussion is taking place as to the real efficiency of the electric system of lighting and starting automobiles."

This Is Added Proof

The results of this Packard test show that in ordinary conditions at average speed, at least 5% of the power is consumed by the electric system. 3.3% of the power was consumed by the electric system at a speed of 40 MILES PER HOUR.

How often do you drive at 40 miles per hour? If you have any respect for speed laws most of your driving is at less than 20 miles per hour.

In this test the car was loaded with passengers, the top, windshield and side curtains up, carrying extra tires. The extra weight naturally decreased the percentage by increasing the *total* amount of gasoline used.

But at the speed of 20 miles per hour—even with the extra weight—the big 38.4 horsepower Packard engine used a good 5% of its power to run the generator.

Electric lighting manufacturers claim that the electric generator uses only 1-2 of one per cent of the power.

Add the Packard test to our figures showing 5 to 12% of power consumed by electrical equipment. Here are the figures:

38.4 h. p. Packard.....5%
32.4 h. p. Car Test.....6.9%
25.6 h. p. Car Test.....10 to 12%

The complete report of tests similar to the Packard test, together with tests of owners in actual service and other valuable information on lighting will be sent you promptly. Use the coupon.

One Point More

Even if it were possible that the engine of YOUR car was big enough, powerful enough so that you would never miss the 5 to 12% power used in running the electrical system—

Even if you did not care how much your lighting cost—

Consider one more point.

Safety

Here's what one paper says—

"Seventy-five per cent. of the collisions that have taken place in the night time in San Francisco of late, can be laid to the glare of the electric headlights of the modern car."—Pacific Motor, San Francisco.

The coupon brings added proof. Use it!

The Prest-O-Lite Co., Inc.

287 Speedway Indianapolis, Ind.

(Contributor to Lincoln Highway)

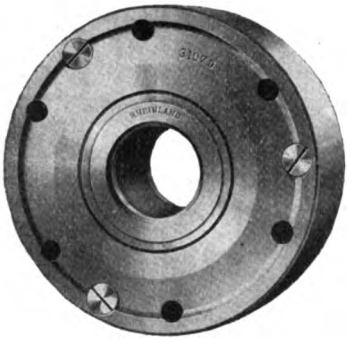
Exchange Agencies Everywhere

THE PREST-O-LITE CO., INC.,
287 Speedway, Indianapolis, Ind.

Please send the Facts about All Lighting Systems to .....
.....
.....
.....

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See What You Gain by Usiug the Rhineland Donble Thrust Bearing



The Rhineland Double-Thrust Bearing, Self-Inclosed, compact, protected from dirt, ready to be installed in one piece and without having to machine any collars or spherical seats. Easily demounted and reassembled.

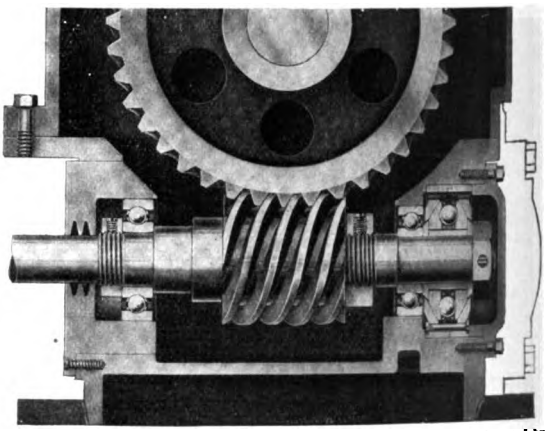
CONSISTENT provision for double-thrust DEMANDS this Rhineland Bearing for many reasons.

First, it does with ONE row of balls what in every other ball type of thrust bearing requires TWO rows, and it goes into much less space than will any other double thrust bearing that does equivalent work.

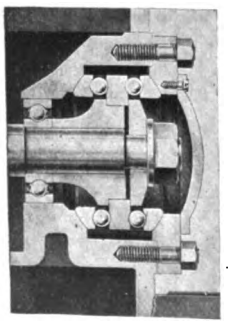
Reference to the above typical installation shows the space saving and the reduced overhang. Note also the saving of expense for the two spherical seats and for the spacing and locking collars which are required with a plain two-row bearing.

Handling operations are greatly reduced as the Rhineland Bearing is put in as a single piece, and does not fall apart when the cap is removed.

Further, the adjustments and the automatic and perfect compensation to shaft spring are fixed BY US. This not only saves much labor, but makes US responsible for these important matters. It's better to have experts seat the aligning discs and get the backing of a firm with reputation at stake, than to take the judgment here of an erecting man or operative who may be little experienced with ball bearings.



The Rhineland way. Saves the space indicated by light lines and seated by shoving into place and tightening one nut.



The old way. Many parts, much careful and expensive machining and danger of bad seating. Bearing falls apart in removing.

The Rhineland Double Thrust Bearing is made in types and sizes to assure durability and splendid service under a wide load and speed range. It is accurate in the extreme and absolutely right as to material, workmanship and design.

The power saving and ultimate economy obtainable are worth most careful investigation by every designer. Send your blue prints and our engineers will show you how to apply this bearing best IN YOUR PARTICULAR CASE.

At least write for literature.

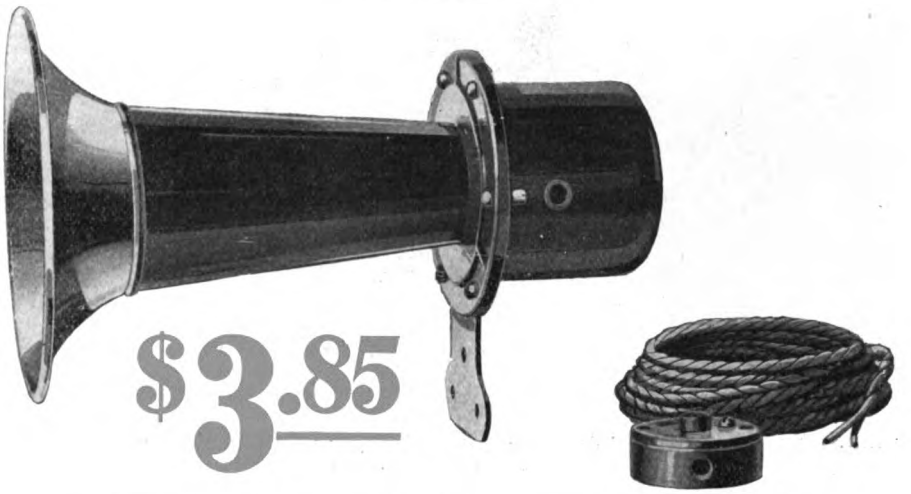
Rhiueland Machine Works Company

140 WEST 42D STREET, NEW YORK

Agents and Supply Depots In All Large Commercial Centers

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Elyria-Dean
TRADE MARK



$3.85

REXO II

THE REXO II is the best and sturdiest warning signal that can be bought for less than Ten Dollars.

Sixty Thousand have been contracted for as standard equipment by thirty motor car manufacturers. Its wonderful retail price is based on a production of 100,000 during the 1914 season.

REXO II's are in the hands of the dealers ready for delivery. Look up one for your car.

REXO II Warning Signals are electrically operated.

Are of ELYRIA-DEAN Quality.

Same high grade material and workmanship used as entered into the original Eight Dollar REXO—more than 80,000 of them sold during 1913 season.

Operates on six volts.

One adjustment yearly the total care required.

Horn furnished in Black and Nickel, or Black and Brass.

Finished with two coats of baked enamel (not air dried, which chips), developed by years of study in the telephone business.

Six-inch bell, quadruple plated.

Furnished in triple corrugated paper box, complete with cord, button, and instruction book, ready for mailing or expressing.

Also Special FORD-REXO II . . . $3.85

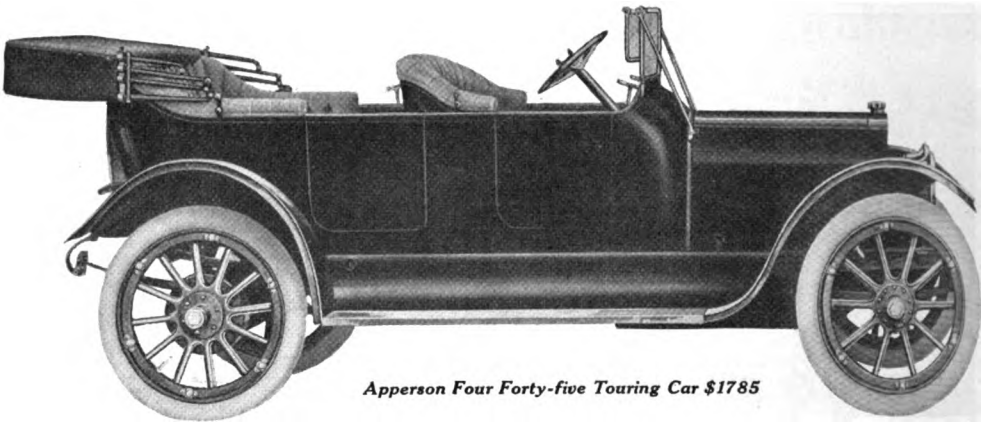
SEE YOUR DEALER

THE DEAN ELECTRIC CO.

2501 Taylor Street ELYRIA, OHIO

See ELYRIA-DEAN PRODUCTS in Spaces 69, 70 and 71, Third Floor, New York Automobile Show; Space 92, Coliseum Gallery, Chicago Automobile Show.

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Apperson Four Forty-five Touring Car $1785

If you wish to make **quick, easy** sales, the Car you handle must have a **working, prosperous factory and organization behind it.**

And, furthermore, critical buyers will raise countless and unanswerable objections against any car **whose maker is now in financial difficulty or regarding whom there is the slightest whisper of impending trouble.**

The Apperson Brothers have been making the

FAMOUS APPERSON "JACK RABBIT"

"THE WIZARD OF THE HILLS"

AT KOKOMO, INDIANA, CONTINUALLY SINCE 1893. They will continue **to manufacture cars** because of the merit of their product and their **reliable, sound business methods**—approved by hundreds of prosperous, prominent dealers.

Think it over!

Now and then a good territory is open for an aggressive and progressive dealer.

Address Department "C" for Prompt Attention

Light 4-45 Touring	$1600.00	4-45 Touring	$1785.00
Light 4-45 Roadster	1600.00	4-45 Sedan Limousine	2500.00
Light 4-45 Coupe	2350.00	6-45 Touring	2200.00

APPERSON BROS. AUTOMOBILE COMPANY

CHICAGO, ILL.
3300 INDIANA AVE.

Kokomo, Indiana

(32)

PORTLAND, OREGON
58 NO. TWENTY-THIRD ST.

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Hupmobile



Grand Central Palace, New York City, January 3-10

Coliseum, Chicago, January 24-31

"32" Touring Car or Roadster $1050 f. o. b. Detroit

In Canada, $1230 f. o. b. Windsor factory

EQUIPMENT—Electric horn; rain vision, ventilating windshield; mohair top with envelope; inside quick adjustable curtains; speedometer; cocoa mat in tonneau; gas headlights; oil side lamps; trimmings, black and nickel.

With regular equipment and additional equipment of two-unit electric generator and starter; electric lights; oversize tires, 33 x 4 inches; demountable rims, extra rim and tire carrier at rear. $1200 f. o. b. Detroit.

In Canada, $1380 f. o. b. Windsor factory

Haven't you found, in your travels, that a Hupmobile family in one town thinks and talks about the car exactly like a Hupmobile family in any other town?

Isn't it one unbroken chain of kind thoughts and kinder words, from Montpelier to El Paso—in every nook and corner of the nation?

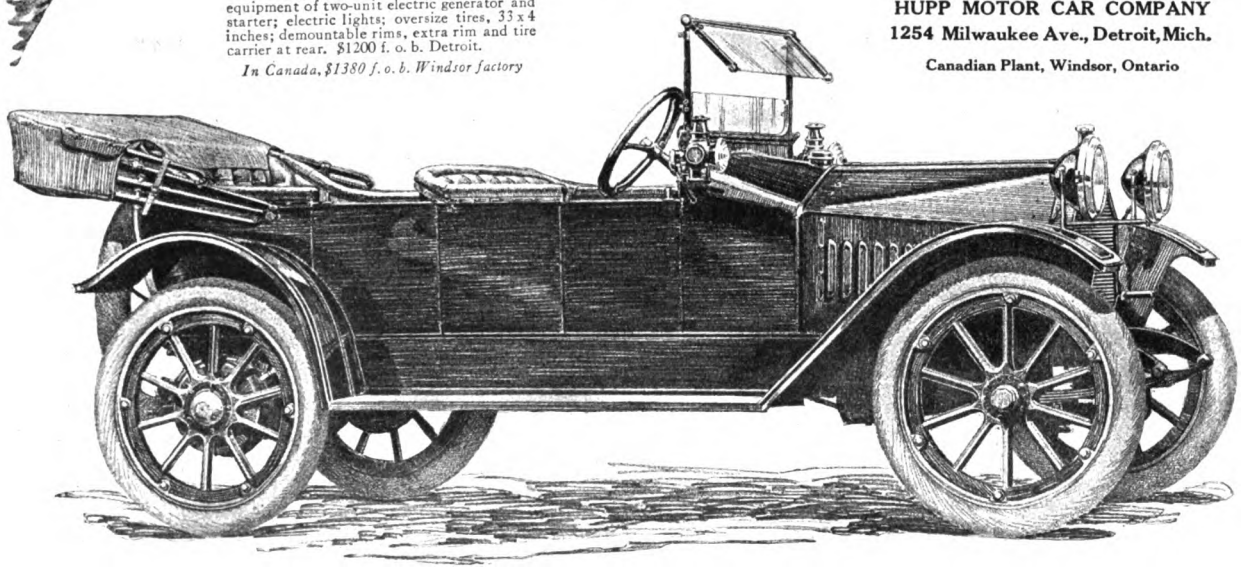
And what finer assurance can you have than this of value that is built deep down into the very vitals of the car?

We would rather have this country-wide good-will toward the Hupmobile than to sell a volume ten times as great on price alone.

We are trying to build every Hupmobile as though we were building only one—as though the one man who was to buy it must be satisfied at all hazards.

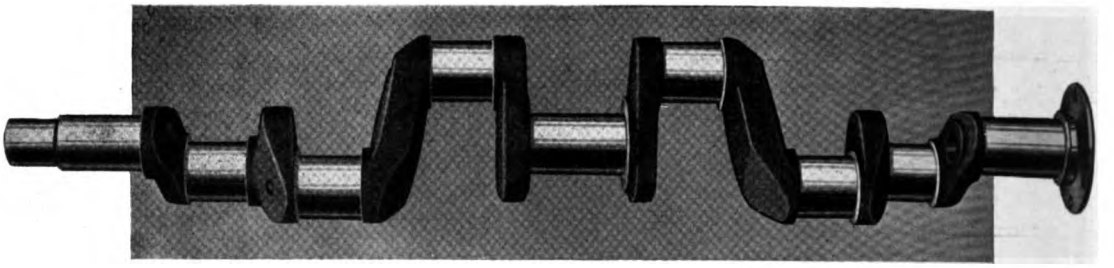
Isn't that better—to satisfy each one intensely and completely—than to sell twice or three times as many and please the buyers only half as well?

HUPP MOTOR CAR COMPANY
1254 Milwaukee Ave., Detroit, Mich.
Canadian Plant, Windsor, Ontario



The car of The American Family

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When it comes to Finishing Crankshafts deal with Headquarters

There is no mystery about machining crankshafts. The path seems straight. The operations mechanical. The chance for variations slight.

Yet, it is common knowledge that two concerns, working from exactly the same blue-prints, under duplicate instructions, will produce varying results.

Delays of a serious nature, retarding production, causing loss of time, losses of stock and losses of money are not unknown.

Competition is eager; promises are many, but—promises don't make crankshafts; don't help production; don't stop losses; don't satisfy.

That's why we urge you to come to headquarters for finishing crankshafts. We specialize on finishing crankshafts—do nothing else—and are pioneers in the business.

Experience, "know how" and splendid equipment are at your service when you deal with us. We make deliveries according to schedule—no excuses, no failures. Our percentage of rejects HAS NEVER GONE ABOVE TWO PER CENT.—has frequently been below that.

Low overhead enables us to make right prices. Shipping facilities are excellent.

Business will soon open up with a rush. You will want crankshafts finished and want them quick. Better get in touch with us now while there is still a chance to avail yourselves of Michigan Service.

MICHIGAN
CRANK SHAFT CO.
LANSING, MICH.

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The New KRIT



$950

(With Electric Starter $1050)

An Instant Success—Everywhere

By the thousands—yes, literally thousands—inquiries have poured in since the announcement of the 1914 Krit.

The verdict is unanimous—that the 1914 Krit at $950 is the greatest automobile value ever offered at or near the price. Those who have viewed the new Krit say they have never seen anything like it—have never thought so many big features were possible in a car under the $1200 mark. They have been surprised at the rare combination of good looks, mechanical excellence, easy riding comfort and tasteful appointments.

Dealers Say It's a Wonder

Wherever it has gone the new Krit has been an immediate hit. One dealer wires to say it will go "big" in his territory. Another orders 50 Krits, earliest possible delivery. A third wants his allotment increased. And so on.

These dealers are on the firing line. They know what the motoring public wants—what is required in a motor car to meet the public demand. They tell us the 1914 Krit has the features that insure for it a wave of popularity.

Thus the way is pointed out for other dealers.

The body of the new Krit is up-to-date, with the beautiful streamline effect. It is complete to the last detail in modern features and conveniences. Tapered bonnet, rounded radiator, graceful fenders and handsome beveled electric lights give the 1914 Krit an appearance of style and class found elsewhere only in the higher-priced cars.

Little Things that Create Big Value

Electric lights, electric starter and electric horn make it a pleasure to drive the Krit. Left drive, means convenience in entering and leaving the car and safety when on the street.

Driving compartment entered from either side gives extra convenience and service. Gasoline tank in dash, giving gravity feed; underslung rear springs; demountable rims; Stewart speedometer—all help to make the Krit a car of exceptional value.

Write or Wire Today

Because our production is larger this year than ever before, we have some territory still open. If you are interested in the big dealer opportunity offered by the 1914 Krit, write or wire today.

Some Opinions From Dealers

Needs a Bigger Allotment

"Hope you will be able to increase our allotment as sales are being closed pretty nearly every day. New Krit more than comes up to our expectations. Our first advertising in Sunday's paper brought crowds to see it."
F. A. Dutton Motor Co., Boston, Mass.

Center of Interest at Show

"Sensation at Toledo motor show is the new Krit. It is surely a beauty."
Cornelius-Hohly Co.

"A Banner Year"

"The new Krit had our competitors on the anxious seat. Have a live bunch of prospects and expect a banner year."
C. E. Whitten, Providence, R. I.

50 Ordered By This Dealer

"We are enclosing herewith a signed order for 50 more cars to be shipped to Minneapolis just as fast as you can ship them. We congratulate you on the great improvements you have made in the 1914 Krit."
Northwestern Automobile Co., Minneapolis, Minn.

"Absolutely Beyond Expectations"

"The entire Philadelphia Branch wants to extend you every congratulation on the new Krit. The new car is absolutely beyond all expectations, not only in appearance, but in power and silence of motor."
W. D. Shepherd, Krit Motor Car Co., Philadelphia, Pa.

Makes a Hit in Europe

"Krit car is the most European-like American car at the Paris show. We are very much pleased with the appearance of this new body."
Deutsche Compo Rubber Gesellschaft, Strassburg, Germany.

KRIT MOTOR CAR COMPANY, Detroit, Mich.

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UNIVERSAL



AUTO TURNTABLE
and the
PORTABLE FLOOR CRANE

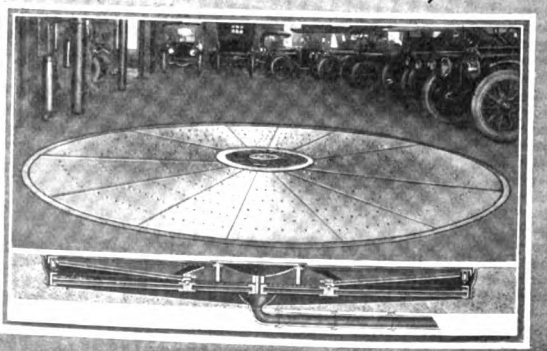
IF you are aiming toward efficiency and Economy your garage needs the Universal Auto Turntable.

These tables are built in sizes to accommodate long or short wheel base cars—with or without a wash rack extension. As an aid to more efficient service you could not get a more useful machine. Not only does the table aid you in checking cars in and out and in washing, but it relieves all necessity of backing and pushing cars about with the attendant danger of accidents.

Send for full details of the tables, their foundations, drainage, etc. Also ask for booklet "E M" describing the "Handy Tool" Portable Crane. Its usefulness and efficiency will cut the cost of labor in your garage or service station one half.

The Canton Foundry & Machine Co., Canton, Ohio, U. S. A.

Universal Auto Turntables are adapted for installation in private or public garages, service stations, shops and factories, either in or out of doors. Ask for folder giving the experience of "Universal" owners.

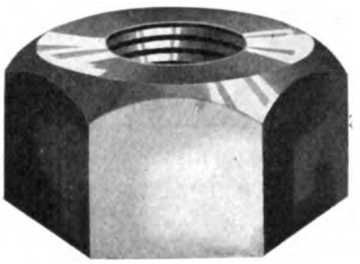


The "Handy Tool" Portable Crane has a capacity far in excess of a car's weight. If it is required to lift a car, motor or body one man is required—not four or five. The "Handy Tool" is used and recommended by hundreds of garages as saving its cost every few months.

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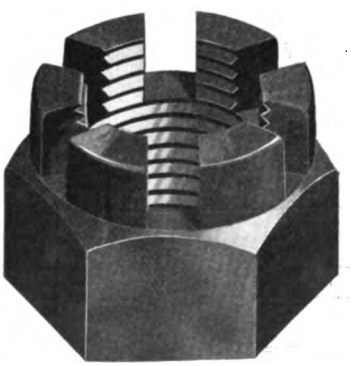
Special Parts made up Quickly



Plain Milled "V," U. S. S. and A. L. A. M. Nuts



Standard "V," U. S. S. and A. L. A. M. Screws



Castellated Nuts—Soft or Hardened

An Automobile Maker who used 500,000 Parts like these this year said:—

"The maker of small parts who gets our business has got to show me something in addition to quality. The certainty that he can and will make deliveries, I figure as a part of my insurance."

The fact that the total amount that this man used is about half of a day's output of NAMCO products **means something.** It means that there are many other big makers of Automobiles and Auto Accessories who specify "NAMCO" when they order parts. And here are three reasons why—because they know that

Specifications will be followed to the letter:—because

NAMCO equipment is so large as not to be flustrated by a spurt of orders:—and because

Their work will go thru on schedule and with careful attention to details.

In other words, the service we offer you is not only to get the work right but to get it out **on time** and make it fast enough to keep the price right also—that's **NAMCO Complete Service.**

If it's special parts you use, we can take care of anything in brass, iron and steel up to 2¼ inches diameter and 10½ inches in length. Send your samples marked for "Estimating Dept." For Standard Screws and Nuts in the A. L. A. M. "V" and U. S. S. varieties write either of the warehouses or factory.

THE NATIONAL-ACME MANUFACTURING CO.

SIXTH CLEVELAND CITY

NEW YORK-BOSTON-CHICAGO-DETROIT-ATLANTA-MONTREAL

WAREHOUSES: NEW YORK 77 WHITE ST.-CHICAGO 23 SO. JEFFERSON BLVD

FACTORIES AT CLEVELAND & MONTREAL

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Over 30% More Cars Sold to Farmers Than to City Buyers in 1912!

¶ Is the result of very accurately checking up registrations in the State of Illinois—and records for 1913 to date show a still greater percentage of sales in the country.

¶ To top this off Willys-Overland are advertising: "The largest percentage of our 1914 output of 50,000 cars will be bought by American agriculturists, the men who are substantially the backbone of America."

¶ More than twenty-five automobile manufacturers and all tire manufacturers advertising have used and are using The World's Greatest Farm Papers, *The Farmers' Review* and *The National Stockman and Farmer*—because

¶ They realize through these mediums they reach more than 230,000 big, substantial, enterprising farmers, men who have the backing to buy when they are convinced—and

¶ They realize these two papers cover the wealthiest agricultural sections in the United States:

THE FARMERS' REVIEW
Chicago
Supreme in Illinois
More than 100,000 paid subscribers

THE NATIONAL STOCKMAN and FARMER
Pittsburgh
Supreme in Ohio and Pennsylvania
More than 130,000 paid subscribers

THE WORLD'S GREATEST FARM PAPERS

Combination Rates

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THE NATIONAL AUTO SHOWS



Under Auspices of Automobile Chamber of Commerce, Inc.

At NEW YORK

Grand Central PALACE

January 3 to 10

One Show
One Building

Passenger Cars—Motorcycles—Accessories

At CHICAGO, January 24 to 31
Coliseum and 1st Regiment Armory

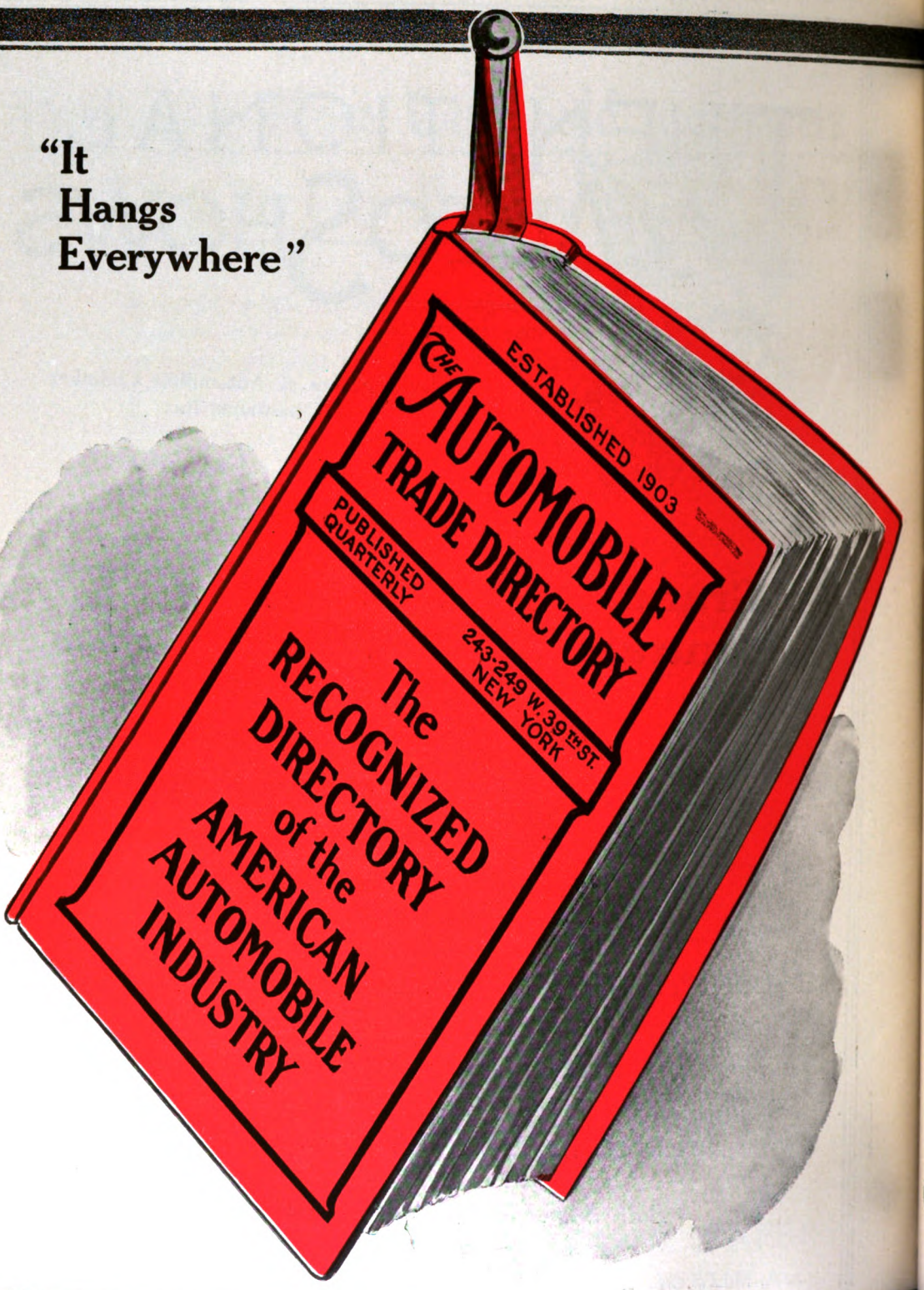
Both Shows Bigger and Better Than Ever

S. A. MILES, *Manager*

7 East 42nd Street, New York City

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"It Hangs Everywhere"



Forms Close December 22nd

ORDERS and change of copy positively must be received on or before that date.

THE AUTOMOBILE TRADE DIRECTORY
243-249 West 39th Street, New York

for the January Issue

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What's back of it?

MR. DEALER, you know that no matter how much the manufacturer of a car says to the consumer about backing up the parts, the consumer looks to you to make good if anything goes wrong and the manufacturer looks to the part maker. So it's of vital importance for you to know what is back of the car you sell and what **is back** of every important part and accessory on the car.

Nothing is more important than the electric system.

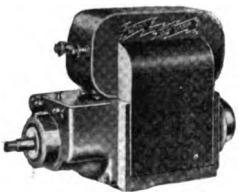
We do not have to remind you of the troubles that have arisen from inefficient and impractical electric lighting and starting installations.

It behooves you therefore, to look well into the relative merits of the different systems on the market, find out **what is back** of each system, and make your contracts accordingly.

Experience

The Auto-Lite System has back of it five years of experiments and tests, five years of usage which have enabled us to discover every imperfection and through gradual changes in our designs to produce a system which is entirely free from mechanical and electrical defects.

We were one of the first companies to design and build an electric system. We built and had



The Auto-Lite Electric Lighting Generator Standard Equipment on many 1914 Cars

adopted as standard equipment the first six volt system. This voltage is now in use in over 90% of the systems on the market.

The building of electric systems for automobiles is not a side line with us—not a speculative venture embarked upon temporarily and claiming only the partial attention of an organization building other accessories.

If experience behind the manufacturer of an article means anything, the fact that our system has behind it the longest and most varied experience of any system on the market today goes a long way towards proving its efficiency and reliability.

A Splendid Organization

The Auto-Lite Electric System has behind it an organization of men who know how to manufacture electric apparatus for automobiles—men whose entire interests are tied up in the success of the Auto-Lite Company, which depends upon the success of the Auto-Lite System on American cars.

When a body of men are gathered together with the sole purpose of producing the best possible article in any given line, when these same men continue to stick together with hardly a change of personnel in the life of the organization and continue to turn out apparatus to the best of their trained abilities, it is only reasonable to assume that the machines they turn out will be right and the organization will stand back of them absolutely.

The record the Auto-Lite System has made in the past five years on over 20,000 different cars, which means under 20,000 different conditions, proves this to be a fact.

Service

Our Service Department with branches in the large centers looks after all trouble resulting from ignorance or abuse on the part of the car owner.

Men are constantly traveling out from these Service Stations, calling on dealers, helping them out of difficulties and explaining the care and operation of the system.

All complaints from any cause on the part of the car owner are given the personal consideration by the service head in Toledo, and satisfactory adjustments made.

This kind of service is expensive, but it spells satisfaction, it is one of the little things that make for resales.

Good Will

The Auto-Lite System has back of it the good will of thousands of automobile owners and dealers. Ask any man who has owned a car equipped with the Auto-Lite System. They are all boosters.

Hundreds of letters in our files telling us of long usage and perfect service prove that the good will of the car buyers is behind our system. There is no better advertising.

Ask the dealers who sell the cars equipped with the Auto-Lite System. Their opinion is the same as that of the car owners. Ask the manufacturers. They will give the Auto-Lite System the biggest boost of all, for they above all appreciate perfect service and lack of trouble.

All this good will means something to the dealer selling a car equipped with the Auto-Lite System.

Advertising

Back of the Auto-Lite System is the power of publicity. Our advertising campaign covers the American Continent. Our advertisements reach and influence millions of people every month.

The public is having the advantages of the Auto-Lite System impressed upon them constantly to the advantage of the dealer selling a car so equipped.

In selling a car equipped with the Auto-Lite System you find the prospect previously impressed with the value of the system and prejudiced in favor of the car it is on. The Auto-Lite equipped car is easier to sell.

Our Engineering Department

The Engineering Department of the Auto-Lite Company is at your service. No matter whether you are a big manufacturer in the market for 50,000 systems or a dealer desiring practical information about one.

Ask us about any points that may come up.

It will be our pleasure to give you the benefit of our experience on the subject.



The Auto-Lite Combination Electric Lighting and Ignition Outfit

Manufacturers

For the manufacturers' benefit we state that our financial and manufacturing facilities are adequate to handle contracts of any size. Every part of the system with the exception of the standard igniter we use with our ignition equipment is made in our own factory.

We are designers and manufacturers, not assemblers.

We have sent most of the dealers in the United States copies of the practical Auto-Lite literature. If you have not received yours, let us know today and we will mail you complete data tomorrow.

THE ELECTRIC AUTO-LITE COMPANY

Toledo **Ohio**

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As sure as the Whirl of the World



A *Capable* Starting Motor

SO rugged and powerful that it will spin a big six-cylinder automobile engine faster than 100 revolutions per minute with the ease of a Hercules and on less than 100 amperes of current, the Auto-Lite Starting motor can be relied upon to perform its function faithfully and fully — compelling positive starting day in and day out, winter or summer.

Strong—compact—**capable**—fully enclosed—protected from the deteriorating effect of water, dirt and grease, it is built for hard, continuous service and should last longer than the car to which it is attached.

Look for this efficient starter on your 1914 car.

The manufacturing and financial facilities of the Electric Auto-Lite Company are adequate to handle contracts of any size, not only for starters but for complete electric lighting and ignition systems as well.

An Explanation to Owners

While the complete Auto-Lite electric lighting system may be attached easily to the average car, it is more difficult to install a starting motor because space and structural limitations sometimes necessitate material alterations and considerable machine work before a satisfactory application can be made—hence orders from individual owners for starting motors are not solicited.

You can have the complete Auto-Lite equipment on your new car however.

Manufacturers can furnish it if you so specify.

The Electric Auto-Lite Company

"The Pioneer Makers of the 6-Volt Electric System"

Toledo, Ohio

Every Motorist should have a copy of the Auto-Lite Handbook on Automobile Electric Systems.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems. The large operation chart which it contains is alone worth the price.

Regular price, 50c.

Will be sent to you for 10c in stamps if you use the coupon

Branches

New York Kansas City

Detroit San Francisco

This Coupon Saves You 40c

The Electric Auto-Lite Co.,
116 Michigan Street, Toledo, Ohio

Enclosed find 10c. in stamps for which please send me your handbook.

NAME.....

ADDRESS.....

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NORTHWAY

The New Northway's *14 Features That An Ideal*



Auto Star Motor Car *Make OHIO Automobile*



R. E. NORTHWAY
of the Manufacturing Department

OHIO



C. D. PAXSON
of the Sales Department

Talk to you thru the OHIO on the Keynote of Automobile Success, Concentration and Elimination:

To manufacture the most perfect Automobile at the least possible cost is the one great aim of Automobile manufacturers, and to do this it requires, above everything else, knowledge, ability, experience, capital, and concentration.

After years of experience and exhaustive tests and expensive experiments as the founder of the Northway Motor Company and original designer of that Company, I am now producing my very latest and what I believe will be my greatest success. I am endeavoring to produce in our two 1914 models, cars that both you and I will be proud of. I am using nothing but the very best material obtainable, employing the most skilled mechanics, and, above all, I am concentrating my ability, efforts, resources and capital on two models only, for I believe we can and are producing a better car at $1,275.00 by concentrating on it than we or any other factory could build for even $1,500.00 if we undertook to build four or five models.

My greatest aim is to make this one of the most efficient production factories in the country, so as to make it possible for us to produce a car of quality and reliability at a popular price, such as is being demanded by the public, and I honestly believe that no better cars are built for the money than we are producing in our ROYAL OHIO models for 1914. We have the facilities, the ability, and the capital to produce and manufacture the car.

Yours very truly,

R. E. NORTHWAY, Gen. Mgr.

Crescent Motor Company, Cincinnati, Ohio.

W. T. Hunter, Pres.
Wm. Pabodie, Sec'y-Treas.

The two vital points in connection with the marketing of Automobiles at the present condition of the business are the quality of the car and the price. We believe that the keynote of Automobile success for both dealer and manufacturer is concentration and elimination.

After twelve years of selling experience covering the entire United States, and by having my finger on the pulse of the trade all this time, I feel that I know just what the public wants, and that is, A car of Quality and Reliability at a popular price. I have had experience in every stage of the industry, passing up every rung of the ladder as Driver, Repairman, Racer, Owner, Agent, Distributor and Manufacturer, and as such I know that there are just fourteen things that constitute the ideal Automobile, and these fourteen things are: Material, Construction, Power, Reliability, Simplicity, Durability, Lines, Finish, Riding Quietness, Service, Design, Co-operation, and Price, all of which are concentrated in the ROYAL OHIO Models for 1914, and the production of such an ideal car will give to the Agent a car that will be an easy and ready seller. For a car to be a ready seller it must have behind it some striking feature that stands out prominently, and I don't think there is a factory in the world that is making a popular priced car who has the valuable asset that we have in the person of Mr. R. E. Northway, for he is today recognized as one of the greatest engineers in the country; his name is an absolute guarantee of quality and reliability.

His knowledge and experience has brought our factory up to the highest plane of efficiency by concentrating all his efforts and ability on two models, thus eliminating all unnecessary expense from a manufacturing standpoint. From a marketing standpoint we have eliminated three-quarters of the selling expense by one selling organization handling the entire output of four different factories, and consequently we are able to place on the market a car for $1,275.00 that cannot be duplicated at the price, and producing a Six-cylinder Model for $1,985.00 that is the equal of any car on the market at $2,500.00.

C. D. PAXSON.

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MOTOR CAR

The Crescent joins together Northway's manufacturing plant with Paxson's selling organization. Time's noblest offspring is the latest. This is Northway's latest.

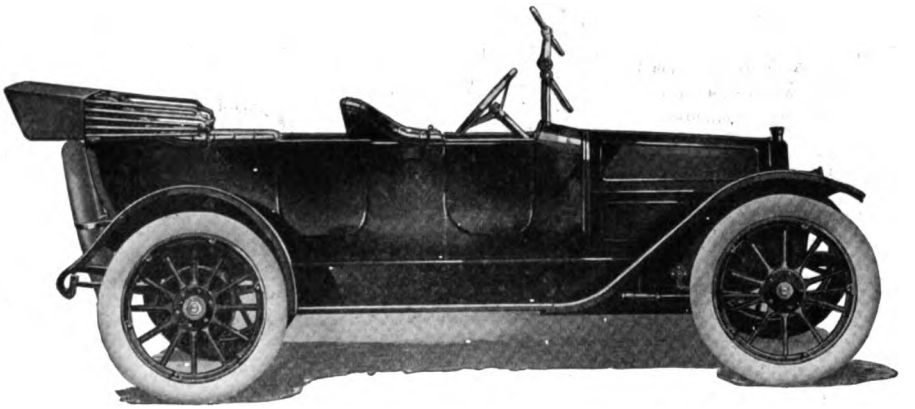
After years of experience, exhaustive tests and expensive experiments, the greatest of all designers and inventors,



Mr. R. E. Northway, the founder of the Northway Motor Co. and original designer of the now famous motor, which is acknowledged by the best engineers and experts to be the greatest motor in the world, now brings out his latest and greatest of all motors, to be used exclusively by the Crescent Motor Co. of Cincinnati, O.

STANDARD OF THE WORLD

Northway's Latest and Greatest Crowning Glory



ROYAL MODEL, $1,985

MOTOR—Six-cylinder, 4 x 6.
AXLE—Full floating on annular bearings.
TRANSMISSION—Four speeds ahead and one reverse.
CLUTCH—Multiple disc.
CONTROL—Center and left hand drive.
SPEEDOMETER—Warner, flush.
TIRES—35 x 4½ and 36 x 4.
WHEEL BASE—132 inches.
ELECTRIC STARTER, LIGHTS and HORN.
RIMS—Demountable.

OHIO MODEL, $1,275

MOTOR—Four-cylinder, 4¼ x 4¾.
AXLE—Floating on Roller Bearings.
TRANSMISSION—Three speeds ahead and reverse.
CLUTCH—Multiple disc.
CONTROL—Center.
SPEEDOMETER—Stewart.
TIRES—34 x 4.
WHEEL BASE—116 inches.
ELECTRIC STARTER, LIGHTS and HORN.
RIMS—Demountable.

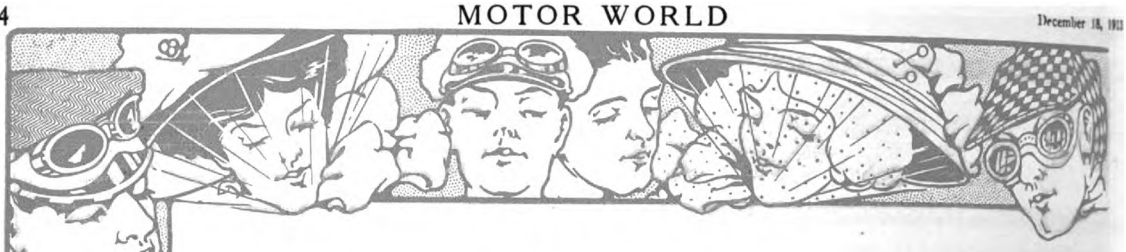
We are now ready to contract with good, reliable, live, wide-awake dealers and distributors on this greatest of all lines

Address All Sales Correspondence to
C. D. PAXSON, Gen. Sales Mgr.
1900 Euclid Ave., Cleveland, Ohio

EXPORT
BELLAMORE & TOOMEY
10 Bridge St., New York City

FACTORY
THE CRESCENT MOTOR CO.
W. T. Hunter, Pres., Cincinnati, O.

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The eyes of the entire motoring world are centered on the----------

Speedwell Rotary

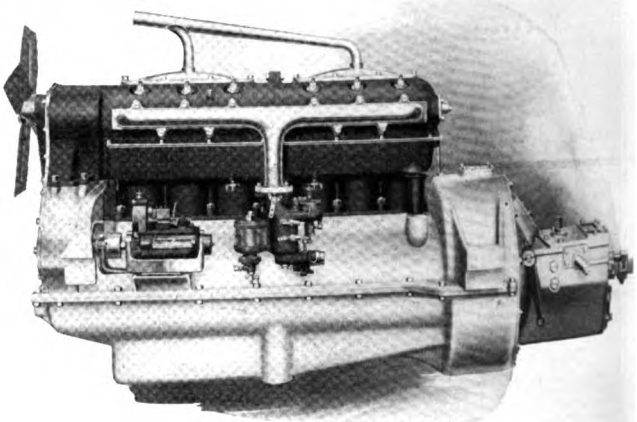
For years the possibilities of a new type of motor employing neither poppet nor sleeve valves has been hinted at. Many hopes of such a motor have arisen from time to time but in almost every case they proved false alarms and died aborning. Here in the Speedwell Rotary Valve Motor is at last the realization of motorists' dreams—

a motor without poppet or sleeve valves—
a simpler motor—
a more powerful motor—
a higher speed motor—
a motor of longer life—
a motor of absolute valve silence—
a motor without vibration even at extreme high speeds.

This motor is unlike any other, is perfect and precise in its action and so simple that the wonder is that its introduction and perfection should have been postponed so long.

Seven Years Spent In Thorough Test and Development

For seven years we have been working on this motor—developing it, testing it out on the road, always sure its principle was right but seeking by refinement of details to bring it up to a point of highest efficiency. We appreciated how radical and revolutionary our action in bringing out a new type of motor would be regarded and we knew it would be fatal to market this wonderful power plant until every last detail had been perfected and refined and O. K.'ed by abnormally long, hard tests on the road.



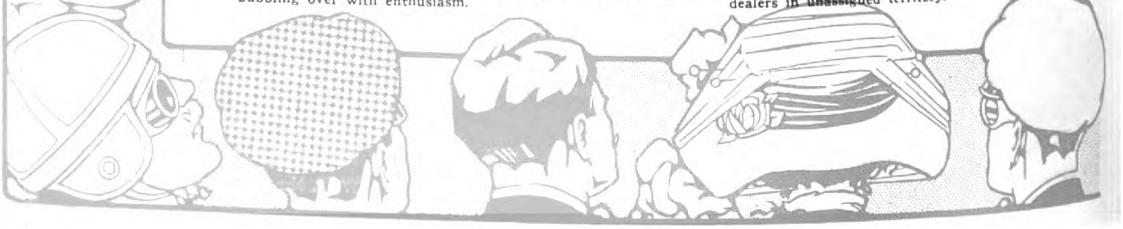
SPEEDWELL ROTARY SIX

Speedwell Rotary Deliveries Start January 1st

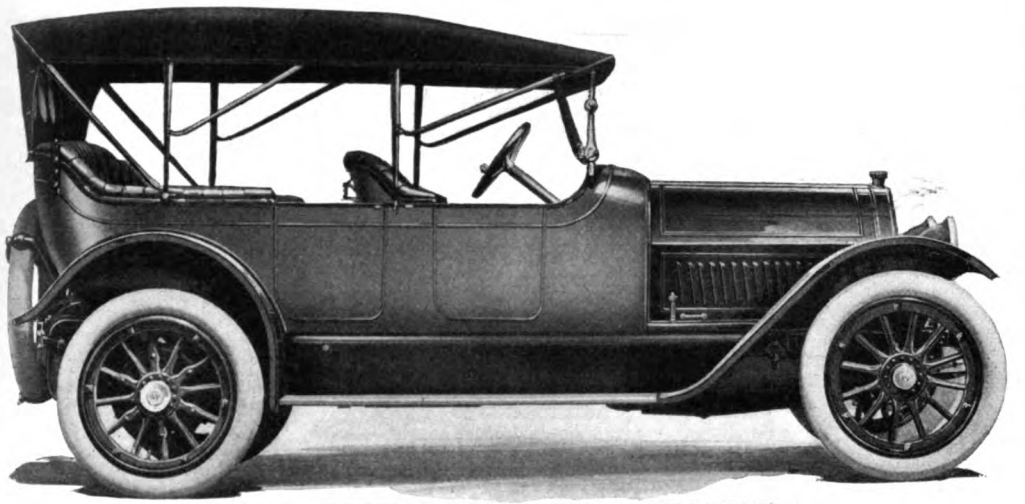
The time of the Speedwell Rotary has arrived. It is right in every detail. Deliveries of cars driven by this six-cylinder rotary valve motor start January 1st. The pity is that we can make so comparatively few of these Speedwell Rotary Sixes the first season. Speedwell dealers who have been at the factory and driven this Speedwell Rotary have gone home bubbling over with enthusiasm.

Two Thirds of Output Already Sold

What has been the result of this dealer enthusiasm? They have told their customers about the motor and within the few weeks past, since we showed this motor to a portion of our own dealers they have sent us definite orders and delivery dates for two-thirds of all the cars we can build this season. The remainder of our output will no doubt be sold in a very brief period. We want these remaining cars well distributed throughout the country and will contract with a few more dealers in unassigned territory.



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5 PASSENGER SPEEDWELL ROTARY SIX, $2850---7 PASSENGER $2950

Brief Specifications and Equipment of SPEEDWELL ROTARY SIX

Speedwell Rotary Six Motor—bore 4⅛ inches, stroke 5¼ inches; in unit with dry disc clutch and selective sliding transmission; mounted on three-point suspension.

135-inch wheelbase.

36 x 4½-inch tires all around on five-passenger, 37 x 5-inch tires all around on seven passenger.

Wagner electric starting and lighting system.

Dual ignition independent of starting and lighting.

Timken axles front and rear.

Pressure gasoline feed with 5 gallon reserve compartment.

The standard equipment furnished is complete and of uniform excellence. Mentioning the more important items in addition to those referred to above are—glass front, electric horn, Warner speedometer, top and top cover, engine driven tire pump, tire carriers, demountable rims, gear shift lever lock, a full compliment of tools, etc., etc.

To Car Buyers and Dealers

To car buyer and dealer alike, we say—if you are interested in this remarkable motor it behooves you to act at once. Once you learn all the wonderful facts about it, once you see it running you will become enthusiastic like all the rest who have seen it.

Get Speedwell Rotary Literature

Whether or not you can this season own a Speedwell Rotary Six depends upon your quickness to investigate and act—but whether or not you are too late, we want you to know all about this motor. We will gladly send literature upon request. We can't adequately describe this motor in this announcement—limited space cannot do it justice.

The Speedwell Rotary Six Will Be Exhibited at New York and Chicago Shows

The Speedwell Motor Car Co.

Dept. W, Dayton, Ohio

A Few Facts About The Speedwell Rotary Valve Motor

The primary advantages of this motor are silence, simplicity, freedom from valve wear and absence of vibration.

Its theoretically perfect combustion chamber form tends to increase power, decrease gasoline consumption, and avoids carbon deposit. The high efficiency is aided as well by the straight passage of gases into and out of the combustion chamber.

There are no reciprocating parts in the valve construction—rotation is continuous in one direction at one quarter crank shaft speed.

Not only is the motor capable of developing high power but attains and maintains extremely high speeds without vibration.

The motor retains its initial efficiency because there is practically no valve wear and the valves cannot get out of time.

The rotary valves are lubricated automatically by oil pumps with direct feeds, the volume of oil being controlled by the throttle opening.

The motor continues to rise in power as the speed increases to a much higher limit than the limit of poppet valve motors.

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We are *Specialists* in the Manufacture of

Quick Detachable and Demountable RIMS

A modern factory, strictly up to date, and absolutely fire-proof; machinery of special design that insures ***quantity*** production; facilities so elastic that we can guarantee ***quality service*** on large or small orders; unequalled experience; and concentration of all our energies on one thing only—the production of RIMS.

Those are some of the reasons why you will find it exceedingly profitable and satisfactory to place specifications with us when it comes to RIMS.

Our Capacity; 2000 sets per day

Jackson Rim Company

Jackson, Mich.

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The Exclusive Sale

of Marathon Tires and Tubes for One Good Dealer in Every Town

THINK what it means to control the sale of the Marathon Tire in your town or city. This is not an ordinary tire. Its a most EXTRAORDINARY tire---a tire wholly in a class by itself. We guarantee every Marathon tire for full 4,000 miles. Yet that is a low estimate. The major average have proved the service to be far above 4,000 miles. Many give that mileage even before the angle tread wears off. Then the plain tread remains to double it. Below we will tell you how we build-in this great service. Right now, Mr. Dealer, you are figuring how to make more money next year. Consider this: Which tire is most profitable to you---a make that every other dealer in your town sells, or the Marathon 4,000 mile tire that you can sell exclusively?

Why You Haven't Made Money in Tires

The reason why you have made practically no money in tires is just this: You have handled what every other dealer handles. Competition is keen. Motorists are shrewd buyers. They shop around and buy where they can get their favorite make of tire at the largest discount. Your competitors want business and they begin to cut prices. To make a sale you must cut below their price. That's why you have not made money on tires.

Marathon Exclusive Sale Plan Eliminates Price-Cutting

To one good dealer in every town or city, we will give the **exclusive sale of Marathon tires and tubes.** He will absolutely **control the sale.**

That absolutely eliminates price cutting. It insures you of a good profit; and it insures the tire user of better service. No Dealer can sell any product at a fraction above cost, and give his customers proper service. You know that.

Our selling plan protects the dealer —protects you. Selling Marathon tires you have no reason to cut prices —no necessity. No one else in your territory can get the sale of Marathon tires. You can therefore make more money selling Marathons.

Motorists Want This Tire

There is a big and growing demand for the Marathon Tire. Motorists want quality—mileage—service. They will pay a fair price for a tire that gives it. Marathon costs motorists less money, because it gives more.

Here are just the reasons why it gives more:



MARATHON

Top-Notch Materials

Only top-notch materials are used in building Marathons. We use genuine Sea Island fabric. And we use the finest rubber—rubber we've proved to be the best and most wear-resisting.

Slow and Careful Hand Building

Using the finest materials, we build every Marathon Tire by hand, very slowly, very carefully. There's no question about hand building being the best method.

This tire is built with utmost care and accuracy through every step. That's one reason for its great service.

Construction Unitized

We single cure Marathon in live steam by a special wrapped tread process. That gives unitized construction—makes all parts one. This method also intensifies the wear resistance.

Factory-Insured 4,000 Miles

Thus you see how we actually factory-insure the Marathon tire. We absolutely build quality—long mileage—service into Marathon. And you see why we can guarantee this tire for 4,000 miles.

The Angle Tread

Note the great angle tread. It is the master of wet streets, slippery and sandy roads. The angles grip in all directions.

If the angle tread wears off after thousands of miles, the thick, plain tread remains underneath to double the service.

Get the Exclusive Sale

Mr. Dealer, why not get the exclusive sale of this tire in your city? It means a satisfactory business and a better profit for you. Write us today and get our proposition.

The Marathon Tire & Rubber Company

Cuyahoga Falls, Ohio

Marathon Distributors:

Buffalo, N. Y.
The Clifford Co.,
20 Goodrich St.

Bridgeport, Conn.
A. L. Schavoir Co.,
357 Fairfield Ave.

Cleveland, O.
Strong, Carliale & Hammond Co.,
1392 W. 3rd St.

Columbus, O.
Motor Owners Supply Co.,
85 N. 3rd St.

Rochester, N. Y.
The Clifford Co.,
296 East Ave.

Chicago, Ill.
India Rubber Tire Co.,
1510-1512 Michigan Ave.,

Detroit, Mich.
Superior Tire Repair Co.,
1290 Gratiot Ave.

Stamford, Conn.
A. L. Schavoir,
Lee St.

Manchester, N. H.
J. B. McCrillis & Son,
Bridge and Malvern Sts.

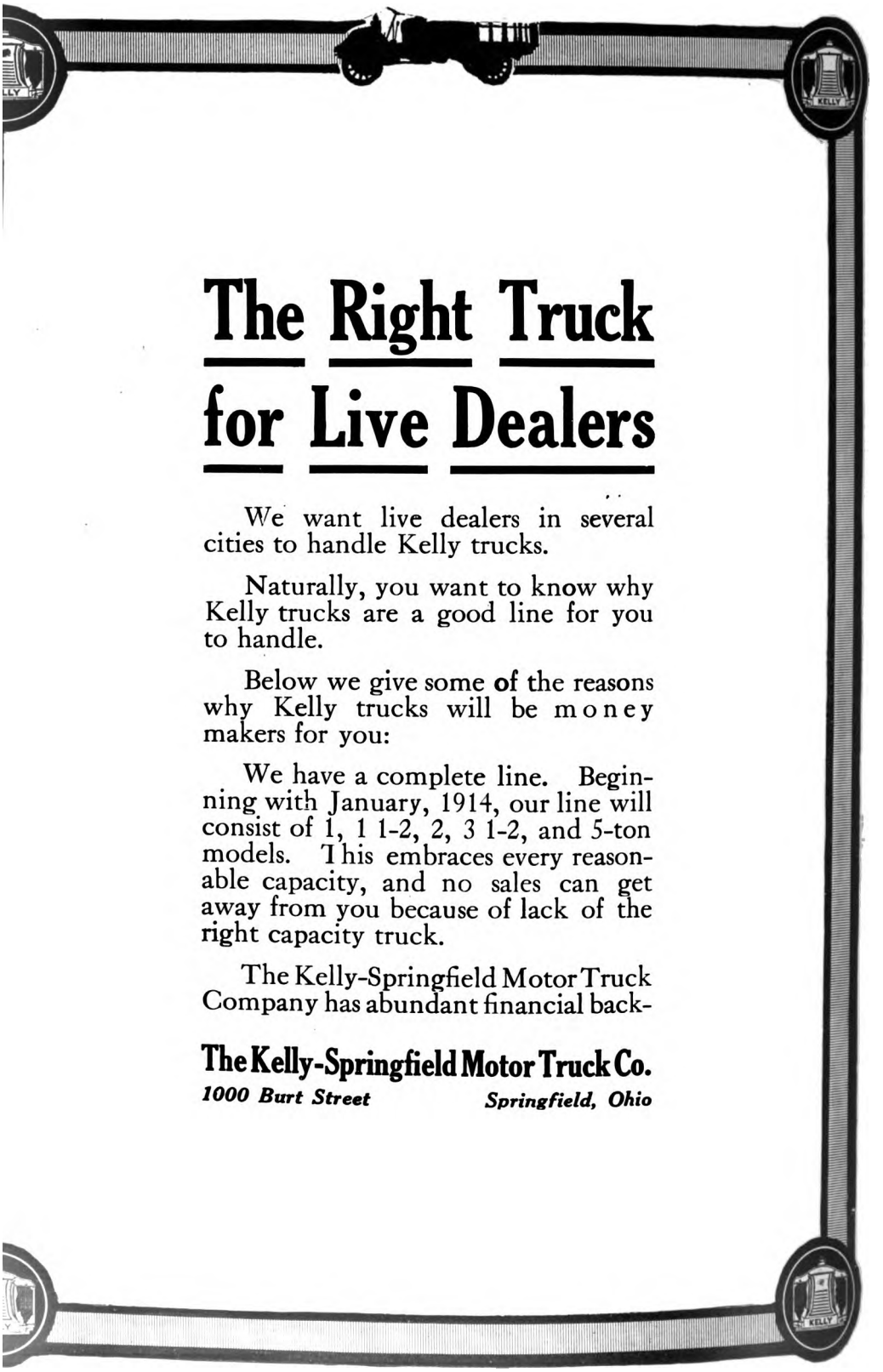
New York City
The Marathon Tire & Sales Co.,
2230 Broadway.

Washington, D. C.
Jones-Kessler Rubber Tire Co.,
605 E St., N. W.

Philadelphia, Pa.
Geo. W. Nock Co.,
126 N. 4th St.

Pittsburgh, Pa.
Marathon Tire Sales Co.
of Pa.

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The Right Truck for Live Dealers

We want live dealers in several cities to handle Kelly trucks.

Naturally, you want to know why Kelly trucks are a good line for you to handle.

Below we give some of the reasons why Kelly trucks will be money makers for you:

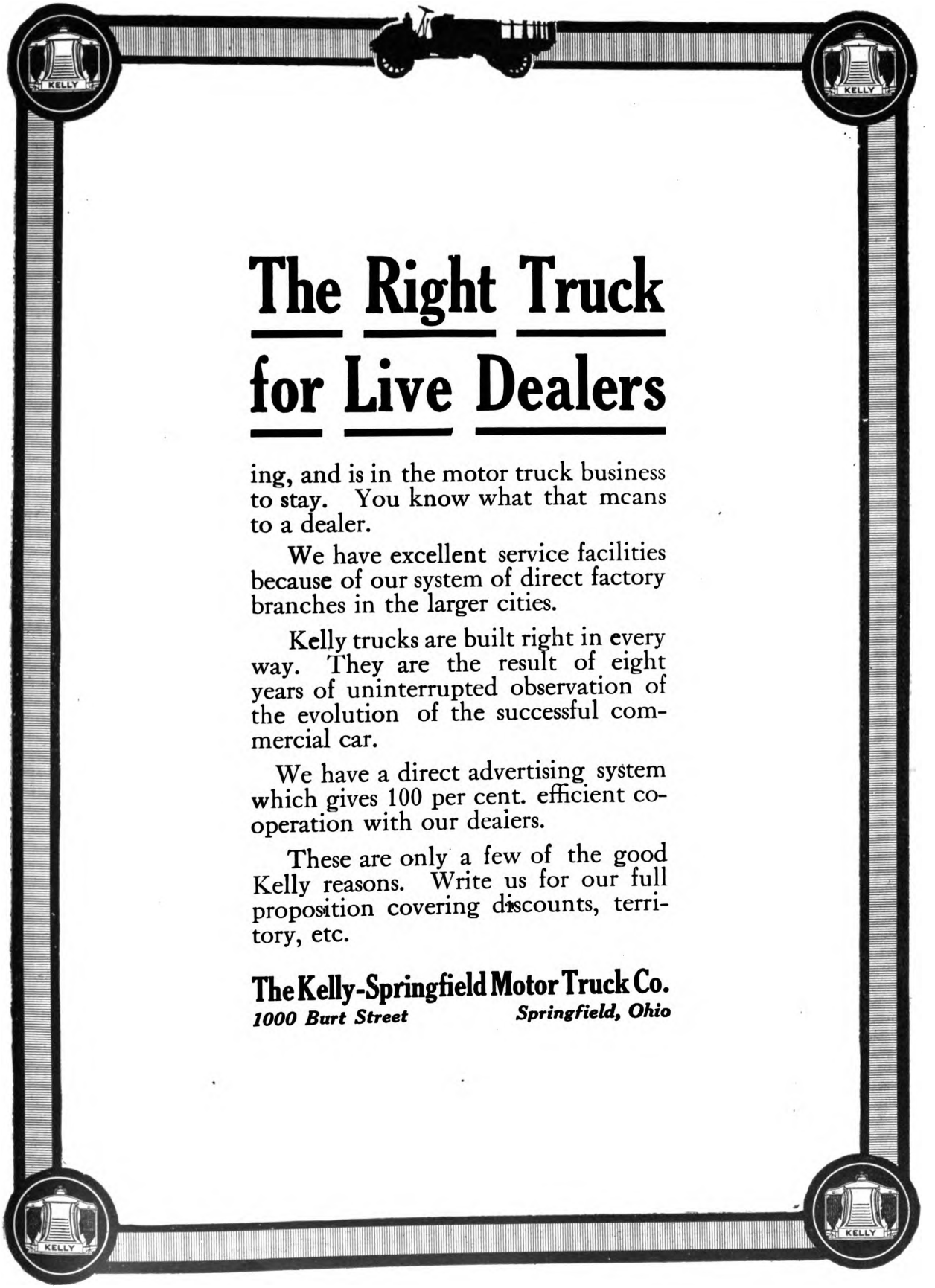
We have a complete line. Beginning with January, 1914, our line will consist of 1, 1 1-2, 2, 3 1-2, and 5-ton models. This embraces every reasonable capacity, and no sales can get away from you because of lack of the right capacity truck.

The Kelly-Springfield Motor Truck Company has abundant financial back-

The Kelly-Springfield Motor Truck Co.

1000 Burt Street ***Springfield, Ohio***

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The Right Truck for Live Dealers

ing, and is in the motor truck business to stay. You know what that means to a dealer.

We have excellent service facilities because of our system of direct factory branches in the larger cities.

Kelly trucks are built right in every way. They are the result of eight years of uninterrupted observation of the evolution of the successful commercial car.

We have a direct advertising system which gives 100 per cent. efficient co-operation with our dealers.

These are only a few of the good Kelly reasons. Write us for our full proposition covering discounts, territory, etc.

The Kelly-Springfield Motor Truck Co.
1000 Burt Street ***Springfield, Ohio***

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RAUCH & LANG

WORM DRIVE

Special Display
Waldorf Astoria Hotel
Turkish Room
Jan. 3-10

Exhibited also at
Grand Central Palace
Auto Show
Jan. 3-10



The Car That Sets the Fashion

In the making of Society's vehicles—from the stately coach of 60 years ago to the finest Electric of today, Rauch & Lang productions have always set the fashion in each successive era.

Particularly is this true of this year's Rauch & Lang Electric, the first electric in America to embody the Straight Type, Top-Mounted Worm Drive. The superiority of the worm-drive method of propulsion is so pronounced as to win the immediate emulation of other makers.

No monarch's equipage was ever built with such painstaking skill, or with greater concern for the perfection of every detail. That is why the output of the Rauch & Lang Electric is always limited, and why it has always been Society's chosen car.

Any Rauch & Lang agent will gladly demonstrate.

THE RAUCH & LANG CARRIAGE CO., 2209 West 25th Street, Cleveland

New York, 1800 Broadway; Cleveland, Superior Avenue; Minneapolis, 1207 Harmon Place; Kansas City, 3501 Main Street

Three Types of Control: Front—Rear - Selective Dual

Select the position from which you desire to drive according to the number of passengers. Controls and Brakes are automatically interlocked by merely turning front seat to natural position required by driving conditions.

These features and the top mounted worm drive are exclusive to Rauch & Lang Cars and, as well as the design of the car and other details of construction, are fully covered by United States patents granted and pending.

COACH BUILDERS

WE HAVE BEEN OVER SIXTY YEARS

Rauch & Lang Electrics



STATE BARGE OF THE WIFE OF MARINO GRIMANI
DOGE OF VENICE

QUEENS AND THEIR EQUIPAGES

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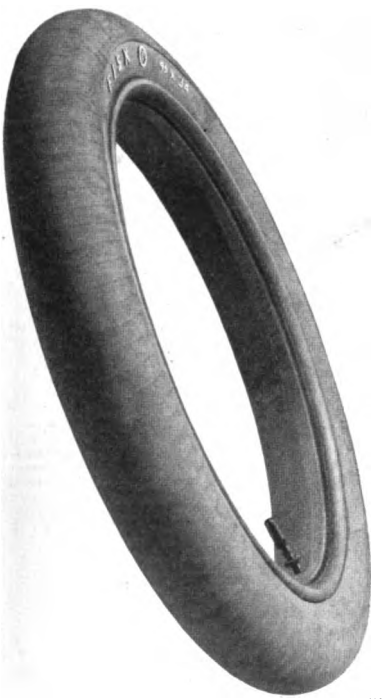
Pin Your Faith On
Fisk *Quality* Tires and Tubes
Success and Satisfied Customers
Will Come Your Way

We back our Dealers to the limit.

We advertise extensively that Fisk Heavy Car Type Tires and Fisk Pure Para Tubes are superior to all other tires and tubes.

We have everything to lose in a poor product, everything to gain in a good one.

Our years of experience, expert engineers, the use of finest materials, the most modern machinery and the ***"will to do it"*** fit us to produce ***the best.***



When you tell your customers that Fisk Tires and Tubes are superior to all others we are right there in back of you with the goods in every word you say.

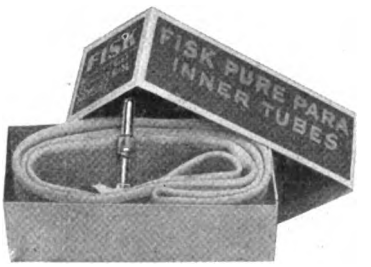
THE FISK RUBBER COMPANY

Factory and Home Office **Chicopee Falls, Mass.**

Forty-two Fisk Branches in Principal Cities

Dealers Attention!

The present year promises to be the greatest in the history of The Fisk Rubber Company. Do you, as a Dealer, want to share in this prosperity? If so write Dept. 23 for Dealer Proposition.



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Buy the Car When You Know the Springs —Not Before

YOU can judge the *beauty* of the car you buy at the first glance. You can tell something of its *power* when the demonstrator takes you over a hill. But you can't be sure of the *springs* unless you determine what springs they are and what their record is. Because a spring giving supreme comfort in a demonstration may, within three months, sag and settle until it bounces and jolts you at every slight depression in the road.

Avoid spring uncertainty and disappointment. *Specify Detroit Springs and be sure.* We protect you beyond that first demonstration, which can't tell you what the spring is worth. Every Detroit Spring is backed by a *guarantee* against settling or breakage for *two years* from date of manufacture. It is spring insurance for you.

Identify Detroit Springs by This Trade Mark

RESILIENT

Detroit Springs

TRADE MARK

SILENT =SELF-LUBRICATING

And by the Lubricating Cup Near the End of Each Leaf

When you're looking the car over, watch for that Detroit Spring trade mark.

It means safety. Detroit Springs are almost impossible to fracture.

Comfort is certain.

Your tires will wear longer because Detroit Springs automatically assume a large percentage of this work.

That pest of the motorist—squeaking—is unknown.

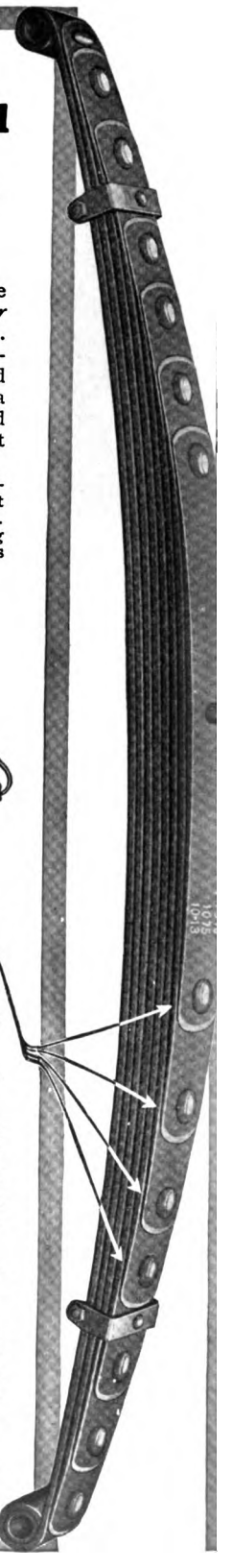
These things require an inspection of the springs. And if you don't find the trade mark or the lubricating cups on the leaves, demand that your car be equipped with Detroit Springs.

You can get them. True, they cost the manufacturer a little more. But he'll give them to you, *if you insist.* Detroit Springs on any car are a strong indication of quality construction throughout the car.

How to Ride Comfortably and Safely Write for Booklet

It pays to know springs, *to know why you should insist on Detroit Springs.* The information can be yours for the asking. A booklet of remarkable interest will be mailed to you on request. It tells the story of spring making from your standpoint as a car owner. Explains how Detroit Springs insure your safety and lengthen the life of your car and tires. Write for it.

Detroit Steel Products Company
2258 East Grand Boulevard, Detroit, Michigan



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TIMKEN
ADJUSTABLE ROLLER BEARINGS

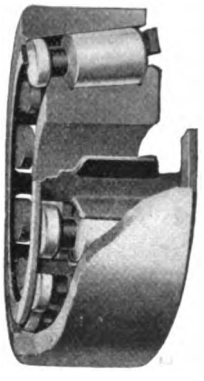


As Your Car Grows Old, Keep it Tuned Up

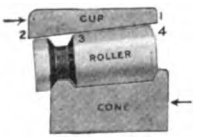
Retain its smoothness, its quietness and comfort. Retain its quick response, its effective power—its dependability. You bought it for these qualities—keep them in the car as it grows old in your service.

Tune up your motor, adjust the carburetor for weather and varying qualities of gasoline. Adjust the steering gear. Adjust the brakes.

And don't forget to adjust the bearings. For all bearings wear same as other moving parts and need adjustment if you are to keep the full power and efficiency of your car.



Timken Bearing partly cut away to show construction



If wear occurs, leaving slight space between cup and roller, adjustments can be made by moving the cup or cone in the direction of the arrows.

As 1-2 and 3-4 always remain exactly parallel, the adjustment brings the different surfaces into perfect line-contact, and no principle of the bearing's efficiency is impaired.

Inside Knowledge that will Help You

WHEEL bearings must turn easily of course—to eliminate friction. But they must fit snugly too—to prevent wheels from wobbling

As bearings wear—all bearings do—they get loose. A little looseness allows the pound that makes faster and faster wear—more and more looseness.

Bearings on shafts that support gears—transmission, driving and differential gears—when they wear (as all bearings do) allow the shafts to drop slightly out of line. The gears on those shafts get slightly out of correct mesh. Imperfectly meshed gears make noise and waste some of the power.

The trouble goes on *at an increasing rate* unless promptly checked by adjusting a type of bearing that can take up looseness when it develops.

Use of steels best adapted for bearings, extreme accuracy of manufacture, strict following of heat-treatment formulas developed by years devoted to concentrated study of bearings alone—these are producing bearing parts that have wonderful wear-resisting qualities.

And yet bearings—all bearings—do wear.

The Timken Tapered Roller Bearing is the one type of bearing that can be adjusted to completely eliminate the effects of its slight wear.

The Timken Tapered Roller Bearing carries the load and resists the shocks along the lines of its rollers instead of on the points of balls; its tapered construction enables it to meet side pressure and shocks in addition to direct load; its line contact distributes pressure and hence minimizes wear—*these are three great principles that are kept in constant operation for your benefit by the fourth great principle of adjustability.*

And beyond keeping the Timken Bearing itself always at full efficiency its great principle of adjustability keeps the shafts and gears up to their top notch efficiency

You can see how important it is to have adjustable bearings in your car if you are to retain its effectiveness as a power vehicle—as it grows old in your service.

Other Interesting facts about bearings are told in the Timken Primer No T-1 "On the Care and Character of Bearings" which, with the Timken Primer No T-2 "On the Anatomy of Automobile Axles," will be sent free, post-paid on request to either Timken Company.

THE TIMKEN ROLLER BEARING CO., CANTON, O.
THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.

Every Timken Bearing, large or small, is of just one Timken quality, through and through

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HESS
AUTOMOBILE AXLES
AND
SPRINGS

See Our Display

Chicago
Coliseum

Space . . . 9-10
January . . 24-31
1 9 1 4

THE HESS SPRING & AXLE CO.
CARTHAGE, OHIO

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The Gateway to Success

for more than sixty firms that manufacture motor vehicles (of which but a few are here indicated), is keyed upon the solid reputation of

Continental Motors

It arches high and reaches wide. Upon a fundamental truth its foundations rest—that the specialist can build best and most economically.

And its courses have been laid in ten years of unqualified success—both financial and mechanical.

An association with the Continental Motor Mfg. Co. is today one of the most valuable assets that any motor car or truck builder can possess.

Such an association fortifies the manufacturer's sales, because it assures unquestioned motor service to every owner.

Continental Motor Mfg. Co.

DETROIT, MICHIGAN.

Factories—Detroit and Muskegon.

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Many automobile bearings have been ruined by adjusting them too tight or too loose. Improper or careless adjustment is liable to cause serious trouble—scored shafts or stripped gears.

Hyatt Roller Bearings have flexible spiral rollers that give just a little under load and are less subject to wear, consequently the necessity of adjustment is entirely eliminated. This feature makes them "fool proof."

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request

"Hyatt Quiet Bearings"

HYATT ROLLER BEARING CO.
DETROIT, CHICAGO
NEWARK, N.J.

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LIST BOSCH PLUGS

Mr. Dealer

BOSCH Plugs in 1914 will be made more popular than ever—they will be the most advertised of Quality plugs. Bosch Plugs will be extensively advertised **FOR** the dealer in over a score of trade magazines, also in the best national magazines.

Whoever reads will be reading Quality arguments, will be learning to choose good workmanship and materials rather than low price; in consequence more motorists than ever will be influenced in favor of Bosch Products.

It is possible for every dealer to turn this selling force into sales. The method is simple—show that you sell Bosch Products, and Bosch Publicity, Bosch Reputation and Bosch Popularity will work for you. Connect with Bosch Advertising, is the sum and substance of it—a logical conclusion to get logical results.

List Bosch Plugs in your catalogues, your leaflets and in your mail inserts—that is the first move. We'll send you the cut shown here; clip the copy and hand it with cut to your printer. Get "hitched up" to a Quality line—it sells with minimum effort and gives a legitimate profit—that's the ideal line.

Do It Before You Forget It.

BOSCH PLUGS

A Quality Plug for Automobiles, Motorcycles, Motor Boats, etc.



The Bosch Plug is one of the well known Bosch Products and is fully representative of Bosch Quality.

Due to its popularity with racing drivers it has been thoroughly tried out under all conditions and has been found thoroughly efficient.

The Bosch Plug has three crescent shaped electrodes which are substantial in size and made of pure nickel. The insulator is Steatite, a stone that can not be even cracked by accidental blows. The method of construction eliminates all joints and in consequence no power loss can be experienced due to compression leakage, etc.

All in all, the Bosch Plug is one of the best designed plugs made, the materials used are carefully selected and satisfaction for a long period is assured.

Price, in all Standard Threads, $1.00 each

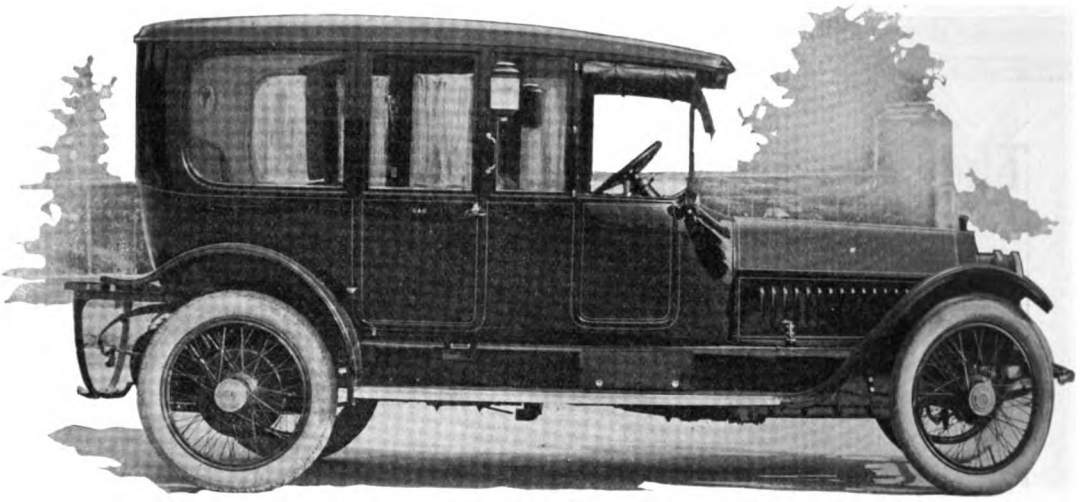
Clip the copy for your Printer send for the cut to "Bosch" N. Y.

BOSCH MAGNETO CO., 224 W. 46th St., New York

CHICAGO :: DETROIT :: SAN FRANCISCO :: TORONTO

Over 100 Service Stations in U. S. and Canada

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AUTOMOBILE BODIES built by

NEW HAVEN CARRIAGE CO.

are distinctive in design, excellent in workmanship and are furnished to makers of cars who satisfy a discriminating public.

Established 1838

NEW HAVEN CARRIAGE CO

NEW HAVEN, CONN.

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The car with the wonderfully FLEXIBLE MOTOR

The KisselKar is built up around a power plant that is a marvel of mechanical perfection. The motor is famous for its dependable power, silence, smoothness in action and responsiveness. It is the exceptional flexibility of the KisselKar motor that practically eliminates gear shifting and makes the Kissel Kar unusually safe and easy to drive.

KISSELKAR

Engine vibration is reduced to the minimum. Even when clutch is out and engine is racing the oscillation is scarcely perceptible.

KisselKar comfort adds new zest to motoring. The liberal wheelbase, big wheels, oversize tires and large roomy seats eliminate the jolts and jars. You are free from the "lurches" and side-sways incident to motoring in average automobiles.

Our catalog describes all three models: 60 "Six" at $3150; 48 "Six" $2350; 40 "Four" $1850. Each fully equipped, electric lighted and started; left-hand drive and center control.

KISSELKAR SERVICE CONTRACT

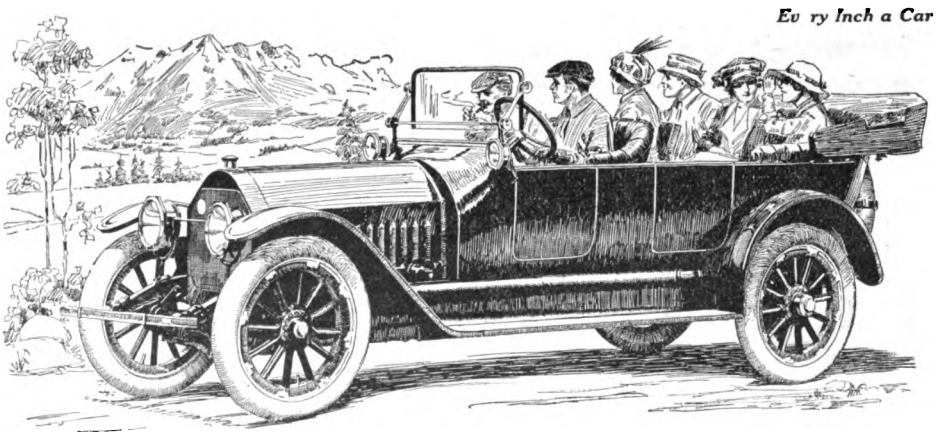
KisselKars are sold under a specific guarantee of service to owners—a written contract that stipulates in detail the mechanical care that forestalls trouble and retards depreciation. The unusual facilities at our Service Stations are always at your disposal.

KISSELKAR TRUCKS—Six sizes, 1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Ask for Truck Catalog.

Kissel Motor Car Company, 159 Kissel Avenue, Hartford, Wis.

BOSTON, NEW YORK, CHICAGO, MILWAUKEE, KANSAS CITY, MINNEAPOLIS, ST. PAUL, DALLAS, SAN FRANCISCO, LOS ANGELES, OAKLAND, Philadelphia, Detroit, Houston, El Paso, New Orleans, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn.; New Haven, Albany, Troy, Rochester, Providence, St. Louis, Marshalltown, Iowa; Omaha, Hastings, Neb.; Madison, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 300 other principal points throughout America.

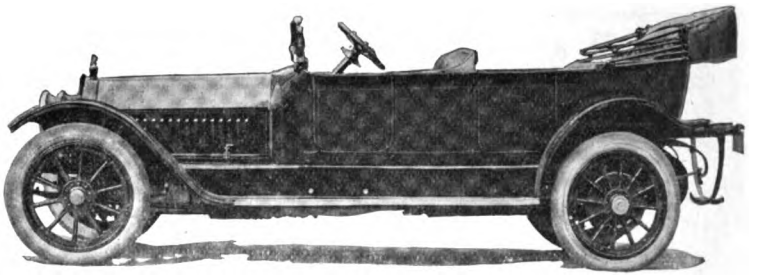
Ev ry Inch a Car



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Once More the Stearns-K

BIG Feature o



Stearns-Knight Six-Cylinder Six-Passenger Touring Car

THE new four- and six-passenger Stearns-Knight Touring Cars, which will be exhibited at the Shows for the first time this season, differ so radically from ordinary standards of body design and treatment as to constitute an entirely new type. Not since Stearns brought out the famous Guy Vaughan, or Toy Tonneau model in 1907 has a body type been so extensively copied as this new type will be during the next year.

In the lines of the bodies themselves—in upholstery, trimming and detail refinements—these cars show what can be accomplished when master designers depart from the beaten path. The instantaneous success of the new models indicates the widespread demand for a body design which would combine individuality in the treatment of details with perfect harmony of the whole.

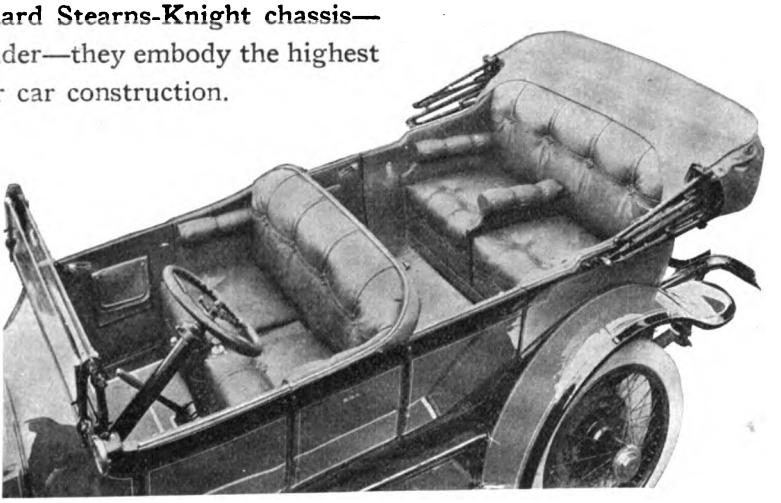
The F. B. Stearns Com a

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Knight Furnishes the of the Shows

Their many distinctive features—the leather-covered cowl-back of the front seats, emphasizing the straight sweep of the body lines—the low, rounded arm-rests—the absence of projecting upholstery—the new type of disappearing auxiliary seat used in the six-passenger model—the one-man top—and many other details make these cars exceptionally attractive and convenient. Mounted on the standard Stearns-Knight chassis—either four- or six-cylinder—they embody the highest developments of motor car construction.

Nothing else at the Shows will equal these new cars in interesting features. Be sure to see them at the Stearns exhibits.



Interior Stearns-Knight Four-Passenger Model, showing type of upholstery used in both Four- and Six-Passenger Cars

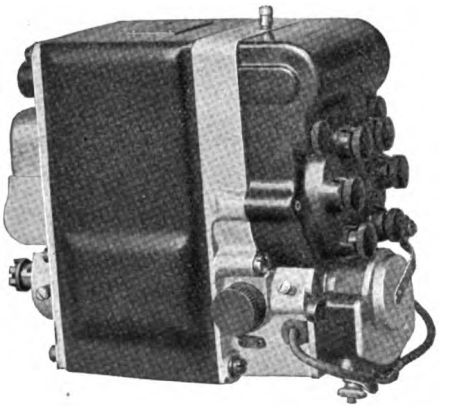
The new Stearns-Knight Coupe and Sedan models will also be exhibited for the first time at this year's Shows. Combining exceptionally attractive lines with the unsurpassed Stearns finish and appointments and the silent, efficient Stearns-Knight chassis, they form a notable addition to the Stearns-Knight line of luxurious closed cars.

any, Cleveland, Ohio

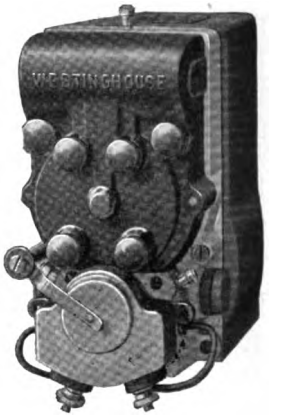
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The Ignition Coil is now made a part of the generator in the

Westinghouse Electric Lighting and Ignition System



Lighting and Ignition Generator
Six Cylinder



Lighting and Ignition Generator
Four Cylinder

A Single Generating Unit supplies current for both lighting and ignition. The coil is eliminated from the dash. Inductance is avoided, resulting in long life for the contacts.

Automatic Spark Control is a feature of the Westinghouse Ignition System which assures maximum efficiency in the engine with economy of fuel.

Dual Ignition is obtained. The battery is an independent source of supply, as well as the generator operating with the battery. The interrupter, ignition coil, and distributor are common to both.

See the Westinghouse Equipment for Automobiles at the New York and Chicago Shows

To Dealers and Repair Shops

Send us your name and we will mail you a complete set of instruction books on Westinghouse Electric Starting, Lighting and Ignition Systems, and place your name on our mailing list to receive new instruction books as issued.

Westinghouse Electric & Manufacturing Co.

EAST PITTSBURGH, PA.

Member Society for Electrical Development
"Do It Electrically"

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A Straight Talk To Automobile Supply Dealers Who Are Not Handling GLOBE BOXES

RIGHT now as you stand on the threshold of another season—stop and ask yourself "What is to be my policy during 1914?"

If you have been a little more interested in prices than in recognized and standard quality—stop and consider. Where does price competition inevitably end?

You know your trade. You know what your customers want—because you have taught them to want the kind of merchandise you are selling.

As a dealer have you made a determined effort to trade up and to educate your customers to want the kind of supplies that give the most value? Or have you followed the line of least resistance and encouraged your customers to want lower and lower prices?

Thousands of supply dealers have taught their trade to want Globe Boxes. These dealers have done this, solely because the dealers have been convinced that it was good business.

It is always good business to sell the thing that makes a satisfied customer.

The dealer who sells a Globe Box knows that the customer will never regret his purchase. He knows that the Globe Box is built to last, that it will look well and wear well, that the sizes are logical and convenient.

The dealer who sells Globe Boxes does not have to prove their quality—for it is apparent to any eye. He does not have to apologize for imperfections of finish and then go over his stock to find a presentable one so as to close the sale. He does not have to scheme how to work off any boxes that are below grade—for there are no such Globe Boxes.

That the difference in price is not a bar to success with Globe Boxes is proved by the fact that in 1912 and again in 1913 there were more Globe Boxes sold to dealers than were sold of any other make.

The Globe line is a complete line including thirty-two different styles and sizes. The dealer who handles the Globe line can meet every car-owner demand and still do business on a smaller investment in boxes.

These things count. Price is not everything—nor even the most important thing.

If you have been more interested in box prices than in other phases of the box question—stop and consider carefully before you decide upon the line you will handle in 1914.

Turn over this page and see in detail what the Globe line offers for next season. Note the profit possibilities in the new trunk and refrigerator boxes—specialties that will sell quickly and at good prices and which will advertise you as a progressive in the supply business

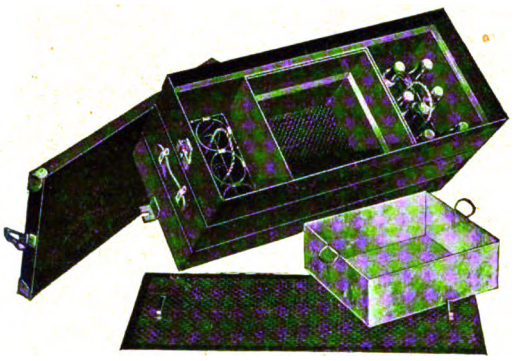
See Globe Boxes at the Automobile Shows:
Space C-81 at the Grand Central Palace, New York. Space No. 2 at Coliseum Gallery, Chicago.

The Globe Machine & Stamping Company

1250 West 76th Street **Cleveland, Ohio**

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Here is The Globe Box Line For 1914



Globe Touring Refrigerator

THIS is a Globe specialty which will be in great demand this season. A practical refrigerator holding food and liquid refreshments for a party of six—yet the box is only a little larger than an ordinary tool box. Holds 25 pounds of ice and has room for plates, knives, etc. Two sizes—

A—27¾x11 wide x 14 inches deep. Has bottle compartment at each end. **List - - - $25.00**

B—Seven inches shorter than size A. Has one bottle compartment. **List - - - $20.00**



Globe Auto Trunk Box

ANOTHER Globe specialty which will sell in large numbers. Carried at the back of the car or attached to the running board by Tee bolts. Toggle lock at each end and the eight brass corners are nickelplated. An unusually handsome box—and as strong as good looking.

Inside dimensions—30½ x 16 deep x 14½ inches wide. Weight 40 lbs. Holds 2 suit cases 30x15x7, but suit cases are not included. **List - $12.00**





GLOBE Boxes include 33 sizes in two styles for pleasure cars and one style for trucks. All Globe Boxes are marked by graceful flowing lines and beautiful rich enamel finish.

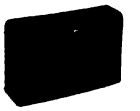
All boxes may be had with Aluminum mats and all but two styles with insulating Wood Lining.

For Ford cars with fore doors there are three popular sizes.

All Globe boxes are packed in sealed cartons which protect the boxes in shipment and in stock. Each box has the Globe trademark inside the cover.





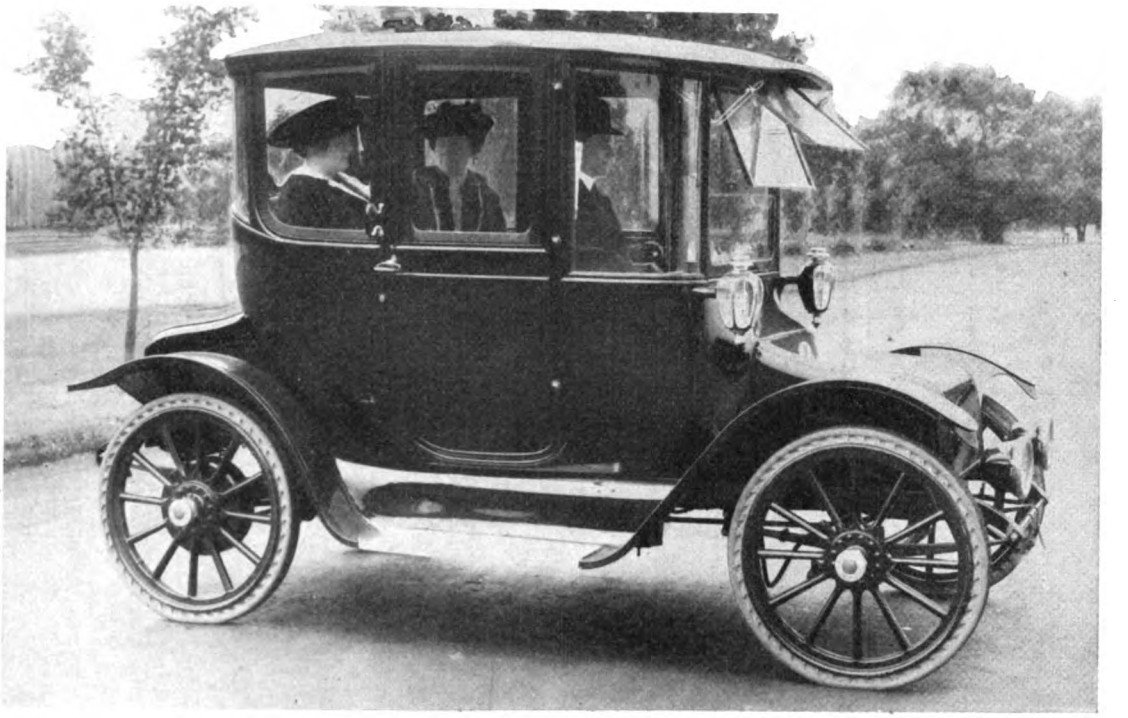


New Globe Catalogue Out December 20.

The Globe Machine & Stamping Company

1250 West 76th Street **Cleveland**

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Highest Award to the Detroit Electric

First choice of the space allotted to electric automobile manufacturers has been awarded the Detroit Electric at the New York and Chicago National Automobile Shows.

This award is based on volume of business. Thus the Detroit Electric receives the premier honor. Its sales are two for one over the sales of any other electric.

Leadership has come to the builders of the Detroit Electric because of certain, definite ideals—to build quality cars, to keep ahead in improvements, to keep prices down. These ideals, adopted from the very beginning, have been rigidly adhered to—and proven right each year.

Why the Detroit Electric is Supreme

In the Detroit Electric is found the highest expression of quality. Large production enables us to replace near-accurate hand work and blacksmithing methods by absolutely accurate machine methods.

We have invested in the most modern and efficient machinery, much of it especially designed to meet our requirements. We have equipped our factory completely for building the Detroit Electric practically in its entirety. Out of the largest shops in the world devoted to the manufacture of electric pleasure vehicles comes the Detroit Electric.

We have secured the best mechanics and the highest skilled body builders. We are ideally located geographically to do this. We retain these experts year in and year out; they maintain the Detroit Electric standard of quality.

We have always bought the very best materials purchasable on the open market. We have tested these materials—and insisted on accuracy—before they entered into a Detroit Electric. We have eliminated unnecessary weight in construction, unnecessary complication in design.

THE Detroit ELECTRIC

The 1914 Leader

Each year the Detroit Electric has led in new features. For 1914 it presents an array of improvements to be found in no other electric. All of these features contribute to make the Detroit Electric the most luxurious car on wheels. All of them make for long life, beauty of appearance, silence in operation, and rare comfort.

For 1914 the Detroit Electric offers the widest choice both in body types and mechanical features—worm gear axle or bevel gear axle, front seat drive, rear seat drive, or Detroit Electric duplex drive. Note the prices:

WITH BEVEL GEAR AXLE		WITH WORM GEAR AXLE	
Victoria	$2300	Gentleman's Roadster	$2500
4-pass. Brougham, rear seat drive	2550	4-pass. Brougham, rear seat drive	2850
5-pass. Brougham, front seat drive	2800	5-pass. Brougham, Detroit Duplex drive	3000

(Prices f. o. b. Detroit)

Write for our beautiful new catalog and information about our opportunity for dealers.

ANDERSON ELECTRIC CAR COMPANY, Detroit, U. S. A.

Builders of "The Detroit Electric"

Largest manufacturers of electric pleasure vehicles in the World

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You May Shift Gears With Your Fingers If You Wish On the New

McFARLAN SIX

BY MEANS OF THE

Gray Pneumatic Gear Shift

The simplest and easiest method of shifting gears that it is possible to devise. This machine, while built outside of our factory, fits the McFarlan chassis layout as neatly and surely as if it were designed especially for it, and by means of it the McFarlan Six, heretofore a little too big and powerful for the average woman to handle, may now be handled with the greatest ease by the frailest woman.

The selection of the gear is made by means of a hand lever on the steering wheel, as shown in the picture. Then a pressure on the clutch pedal actuates the valve in the shifting mechanism and the gears are shifted quickly and positively. Compressed air does the work. The same medium that is used on the fastest passenger trains to brake and bring them to a stop is used to shift these gears.

The shifting mechanism is so designed that the available air pressure is trebled. Thus with two hundred pounds pressure in the air tank the [illegible] to the gears.

for second or low, as the case might be, then forget about your gears. When the necessity for changing arrives, a simple pressure on the clutch pedal shifts the gears and there is no fumbling with the hand lever with your eyes off the road.

So powerful is this gear shift that if an inexperienced driver should stall his car on a hill and it should back down against the gears and lock them, the gear shifting mechanism will still make the shift. Everyone who has had to get out on a hill and rock the car until the locked gear could be disengaged will appreciate this feature. The shifting mechanism is powerful enough to move the car far enough to release the gears.

The simplicity of the entire shifting mechanism is startling. Even a novice could drive and handle a car equipped with it after one lesson, and any intelligent [illegible] instantly after [illegible]

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The shifting mechanism is so designed that the available air pressure is trebled. Thus, with two hundred pounds pressure in the air tank, six hundred pounds is exerted to shift the gears. They are positively snapped into action and there is none of the drag and "burring" so common with other types of gear shifting mechanisms.

ANTICIPATE YOUR GEAR

When starting up a hill, if you fear you will not be able to make it on direct, simply set the selector on the steering wheel one lesson, and any intelligent mechanic understands its operation instantly after once having seen it. The whole mechanism follows out the McFarlan principle of installing such simple auxiliary devices such as starting, shifting, etc., that any repair work may be done upon them in any well equipped repair shop.

There is no expense for maintenance, as the same air is used that the McFarlan pneumatic starter uses and the drag on the motor is only intermittent and that very, very slight.

This revolutionary improvement may be had on any McFarlan Six of the new Series at a slight extra charge.

See It At The Shows---- NEW YORK CHICAGO BOSTON

In the McFarlan spaces and in those allotted to the Gray Company, you will see complete McFarlan chassis equipped with this gear shift in actual operation. Tack this on your wall to remind you to look it up.

Dealers

The McFarlan Agency is rapidly assuming franchise proportions. Our volume is not large and no national publicity ever will be attempted. The money that this costs goes to you. The McFarlan Six is a thoroughly modern, very beautiful car, so conscientiously and well built that it stays sold, which means a permanent year-after-year money making business for you. Our agency list is not yet complete, do you want this superlative proposition?

This is the third year for the current model of the McFarlan Six. It has been improved from time to time but basically it is the same Series T that has been carrying the McFarlan flag for three years. It is not, therefore, an untried new model rushed out without experimental work to sell at a price. It is thoroughly established in public estimation as worth every dollar we ask for it.

It has our own unequalled 4 x 6 inch bloc motor and the McFarlan special design full floating axle. It is a feature car from the ground up and will do any of the stunts required of an automobile. It is short and light enough to be very easily handled and yet we have, with one or two exceptions, the roomiest bodies on the market. We will back it for easy riding qualities, power and durability against any car on the world's markets, regardless of name or price.

2, 4, 5, 6 and 7 passenger open models	$2590.00
4 passenger coupe	3300.00
7 passenger limousine	4000.00



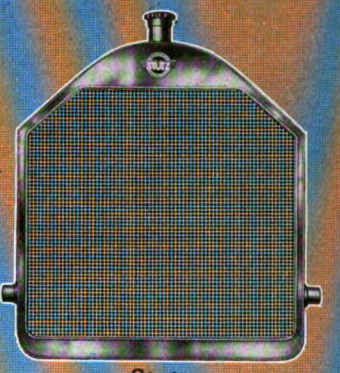
The newest McFarlan Six. Note the true stream lines, sloping hood and novel windshield mounting.

The big McFarlan catalog and a special booklet on the Gray Gear Shift as applied to the McFarlan car will be sent on request

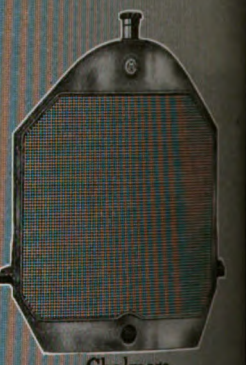
McFARLAN MOTOR COMPANY, Connersville, Ind.

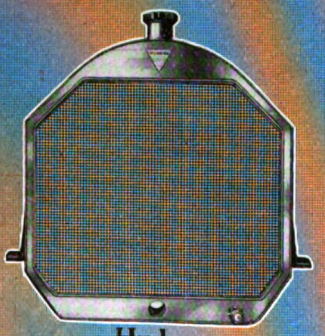
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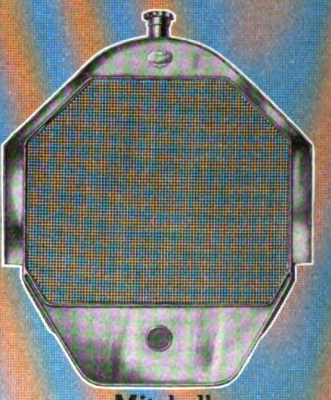
Fenders



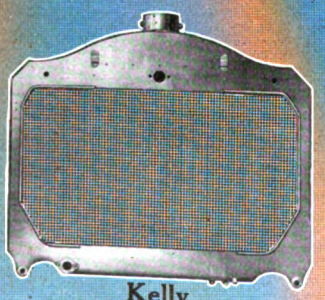
Stutz


Chalmers


Hudson


Mitchell

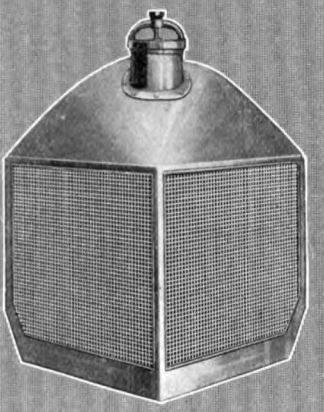

Case

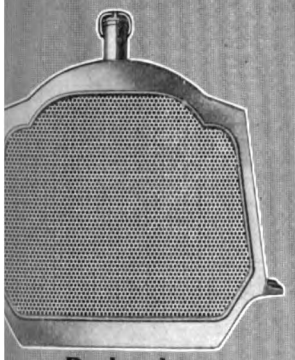

Kelly

Fedders
Buffalo,

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RADIATORS

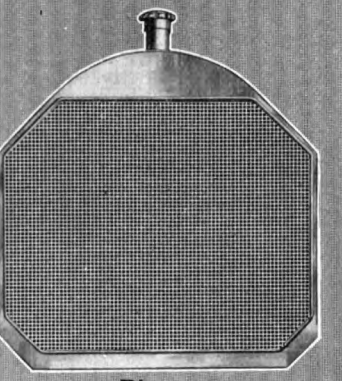




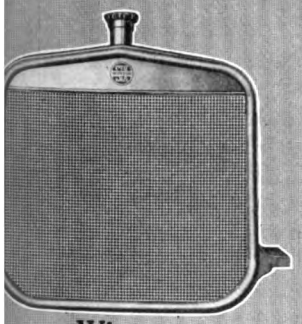
Packard

Fedders quality is best shown by the character of the cars upon which Fedders Radiators are to be seen (a few of which are illustrated in this advertisement)

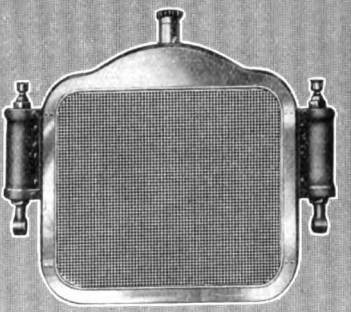
No matter what your radiator requirements may be we are in position to take care of those requirements, both as to the quality of the product and its prompt delivery.



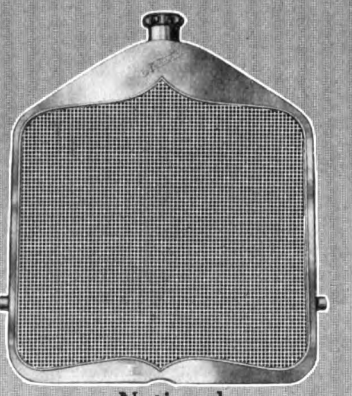
Pierce



Winton



White

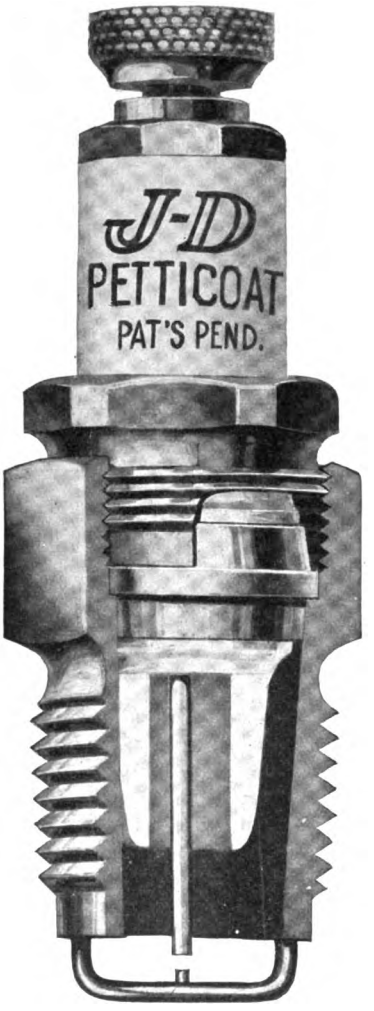


National

Manufacturing Co.
New York.

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A Complete Line—a Plug for Every Type of Motor—a Price for Every Purse



This 75-Cent Plug Especially Is the Salvation of All Oily Motors.

It is the *J-D* Petticoat with closed end of improved design, which not only adds stability to the entire plug, but makes it especially desirable and serviceable where an excess of oil is used.

Besides, the porcelain is made in the Jeffery-Dewitt potteries of imported clays blended by a secret process. It will withstand any voltage.

For Ford Cars

this plug is almost a necessity, guaranteed not to foul or crack. It gets all the good out of the motor.

Licensed under Canfield Patent.

JEFFERY-DEWITT CO. DETROIT, MICH.

Registered. U. S. Patent Office.

SOONER or later—every man with a balky motor becomes a *J-D* patron, for *J-D* plugs are the standard cure for over-oiled and dirty engines. There is—in the *J-D* line—a type for every kind of motor, for every ignition defect, for every motorist's preference, for every pocketbook.

75c. to $2.00

Motors are like human beings—they are all different; and nobody ever gets the best out of his motor until he uses the particular plug it needs. It is wonderful what a difference the right type of plug makes—and the *J-D* line has a type for every variety of motor.

The result is that every dealer who handles the *J-D* line becomes an ignition specialist—he gets the pick of trade, and holds it.

J-D plugs include the famous Reliance that "sparks in water"—$1—for motorboats; the "Visible Gap" that instantly locates ignition troubles—$1; the Conical and Petticoat, open or closed end—75 cents; or with sparking points of solid platinum-iridium—$1.25; also the Motorcycle Standard—$1—the finest plug ever manufactured for this purpose; and special Heavy Duty and Double Series types of especial merit.

Write for our popular free illustrated book. "Spark Plug and Ignition Talk. Learn what this complete line offers you in sure profits.

Jeffery-Dewitt Company

65 Butler Avenue, Detroit, Michigan

Licensed under Canfield Patent.

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A 400 Pound Man

standing on a 9-inch crank, could not budge a frozen engine that the Rushmore Model C Starter will turn.

Every starter has a stalling point,—a point where it can take no more current and exert no more torque. If it doesn't start a cold engine **then,** its owner goes by train or stays at home!

The Rushmore Starter, Model C, exerts at the point of stalling a torque of 328 inch-lbs., using 580 amperes. Applied to a 21-inch flywheel, using a 1¾-inch pinion, that is equivalent to 435 lbs. at the end of a 9-inch hand crank. With any less resistance, the starter will get the engine under way and warm it up by the heat of compression and of piston friction. At 30 engine r.p.m. or more, the energy converted into heat exceeds 1 horsepower, and this limbers the engine up very rapidly. An engine thus started cannot fail to ignite, because the mere heat of compression, when turning quickly after limbering up, will vaporize the gasoline.

The power actually required by a 50 h.p. engine is far within the stalling limits above named; therefore the Rushmore Starter can never be stalled by any engine within its rated capacity.

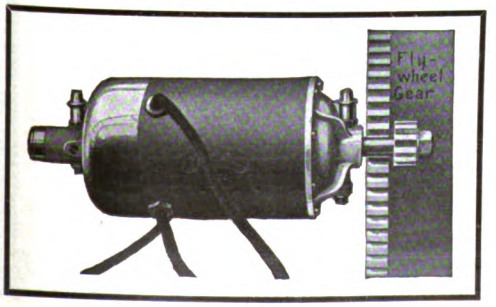
One reason for the great stalling torque of the Rushmore Starter is found in the same fact that partly explains its high efficiency at normal speed,—namely, its very low internal resistance. That resistance determines the current taken, and therefore the torque exerted, when the armature is held against rotation. It also largely determines the electrical losses in normal running. In a word, **the starter showing a high efficiency is by the same token NOT easily stalled.** A low efficiency starter is easily stalled.

The Rushmore Starter, Model C, spins any engine up to 6 cylinders 5 x 6 inches 25 to 60 per cent faster than any other electric starter using the same current. It weighs only 30 lbs., and represents a saving of $25 to $50 per car to the manufacturer.

RUSHMORE DYNAMO WORKS *Plainfield, N. J.*

Cars now equipped with Rushmore Starting and Lighting System:

SIMPLEX LANCIA KNOX MERCER ALCO CRANE REGAL KLINE



Also regular equipment in America on

Mercedes DeDion-Bouton Isotta Fraschini Austrian Daimler Delaunay-Belleville

Watch the List Grow!

RUSHMORE STARTER MODEL C

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This shows the Thurber Rotary Starter. Operates by compressed air. Pump and starter built as a unit. Has no belts nor chains. Noiseless, sure, reliable; can't wear out.



This starter can be applied to any car. ***Requires no special lay-out.*** *Goes on front of the car in place of crank. Installed without touching the engine. Is neat, compact, easily understood.*

Here is the Simplest and Surest "Starter" in the World

We expect to get challenged on that statement; but we are ready with our proof. We ask no odds of anyone. We invite you to make your own comparative tests. We are prepared to have the validity of our assertion stand or fall on what the Thurber Rotary Starter actually does when tested on your motor. "Deeds not words" is our motto.

Two years ago we placed the Thurber Rotary Starter on the market. We knew we were right in principle; two years in service under many different conditions showed us many details that could be improved. The Thurber Rotary Starter of today is offered as a finished product. There is not an experimental feature about it. It is right—and it stays right in service.

The Ultimate Starter

There is a growing conviction that compressed air is the ultimate starting energy. This conviction is based upon several well-known facts, viz:

Simplicity, in which it excels.

Efficiency, meaning ample power plus reliability under every condition.

Economy. No cost of operation.

Ease of installation and adaptability to any motor.

Reasonableness of price.

Spins Motor Any Weather

The "Thurber" is easy to operate. Press foot on button which operates the patented double-action valve and this admits air to the starter which instantly **spins** the motor. It doesn't just **turn** it over but **spins** it every time. Why have manufacturers of fire trucks welcomed the Thurber? All of them use large, high compression motors. All demand reliability above everything. Think it over.

See Us At

New York

Space D 8 and 9

Chicago

Space 207 to 236

Will you let us send you a book that tells you all about the Thurber Rotary Starter?

The Thurber Rotary Starter Co.

687 Atwater Street East, Detroit, Mich.

DEALERS: **Here is a great chance to make big money. We have a winner. It can be applied to any car. Wire or write at once regarding agency proposition.**

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J-M AUTOMOBILE ACCESSORIES

ONE SERVICE---ONE GUARANTEE

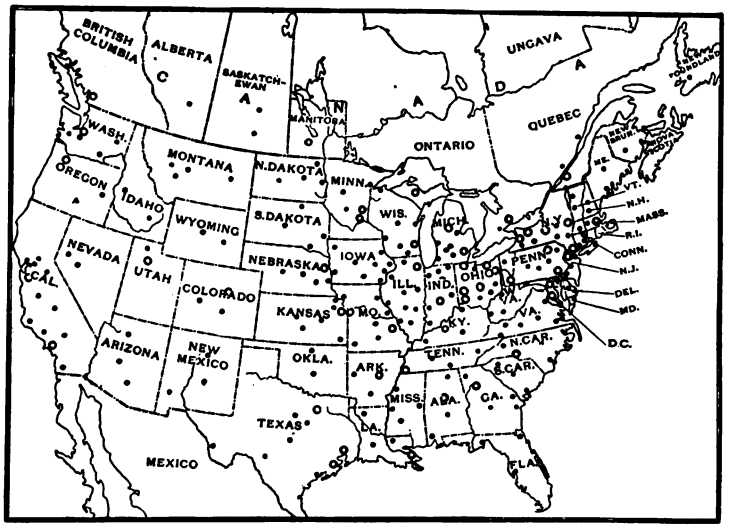
Back of All These Automobile Accessories

H. W. Johns-Manville Co. Service Branches

AKRON, O. Second National Bldg.
ALBANY, N. Y. 53 State Street
ATLANTA, GA. 31A So. Broad Street
BALTIMORE, MD. 207-213 E. Saratoga St.
BIRMINGHAM, ALA. 851-852 Brown-Marx Building
BOSTON, MASS. 55, 57 and 59 High St.
BUFFALO, N. Y. 206-208 Main Street
CHARLOTTE, N. C. 1117 Commercial Bank Building
CHICAGO, ILL. 322 N. Michigan Ave.
CINCINNATI, O. 654-656 Main Street
CLEVELAND, O. 813-815 Superior Ave. N. W.
COLUMBUS, O. 45 West Long Street
DALLAS, TEXAS 503 Sumpter Building
DAYTON, O. 259 Fourth Street
DENVER, COLO. 534 Denver Gas and Elec. Light Building
DETROIT, MICH. 72 Jefferson Avenue
DULUTH, MINN. Superior Street and Fourth Avenue, W.
GALVESTON, TEX. 2209-11 Strand Street
HOUGHTON, MICH. 96 Shelden Street
HOUSTON, TEX. 706 Stewart Building
INDIANAPOLIS, IND. 30 S. Pennsylvania St.
KANSAS CITY, MO. 1321-1323 Main Street
LOS ANGELES, CAL. 222-224 N. Los Angeles Street
LOUISVILLE, KY. Paul Jones Building
MEMPHIS, TENN. 45 South Third Street
MILWAUKEE, WIS. 201-231 Clybourn St.

WHAT responsible National Accessories Service coupled with a standardized guarantee means to the manufacturer, the dealer and the owner of a car. A vital message to

PROGRESSIVE AUTOMOBILE DEALERS



Circles on map indicate Branches. Dots direct representatives.

With $5,000,000 capital and with its practically unlimited resources of sales representation the H. W. Johns-Manville Co. is in a position to offer a more efficient and highly organized national service than any other manufacturer, or distributor of Automobile Accessories.

H. W. Johns-Manville Co. Service Branches

MINNEAPOLIS, Minn. 251-253 Third Ave., So.
NEWARK, N. J. 239 Halsey Street
NEW ORLEANS, LA. Cor. Magazine and Gravier Streets
NEW YORK, N. Y. Madison Avenue and 41st Street. Ex. Offices
OMAHA, NEB. 1003 Farnam Street
PHILADELPHIA, PA. 21, 23 and 25 N. Second Street
PITTSBURGH, PA. 100-102 Wood Street
PORTLAND, OREGON 22 Front Street
ROCHESTER, N. Y. 521 Chamber of Com.
ST. LOUIS, MO. 501-505 N. Third St.
ST. PAUL, MINN. 615 Ryan Annex
SALT LAKE CITY, UTAH 306 Dooly Block
SAN FRANCISCO, Cal. Second and Howard Streets
SEATTLE, WASH. 1020 First Avenue, So.
SYRACUSE, N. Y. 344 Gurney Building
TOLEDO, O. 1014 Grand Street
WASHINGTON, D. C. 304 Union Trust Bldg.
WILKES-BARRE, PA. Coal Exchange Bldg.
YOUNGSTOWN, O. 502 Stambaugh Bldg.
THE CANADIAN H. W. JOHNS-MANVILLE, CO., LTD.
MONTREAL, QUE. 450-452 St. James St.
TORONTO, ONT. 19 Front Street, East
VANCOUVER, B. C. 511 Winch Building
WINNIPEG, MAN. 92 Arthur Street

This list is being steadily increased

H. W. JOHNS-MANVILLE COMPANY

41st Street and Madison Avenue, New York City

49 Branches and 589 Direct Representatives. Complete distribution and country-wide service assured. J-M service is maintained more economically and offers greater advantages to the dealer because the great cost of service is borne by a full line of standard Automobile Accessories.

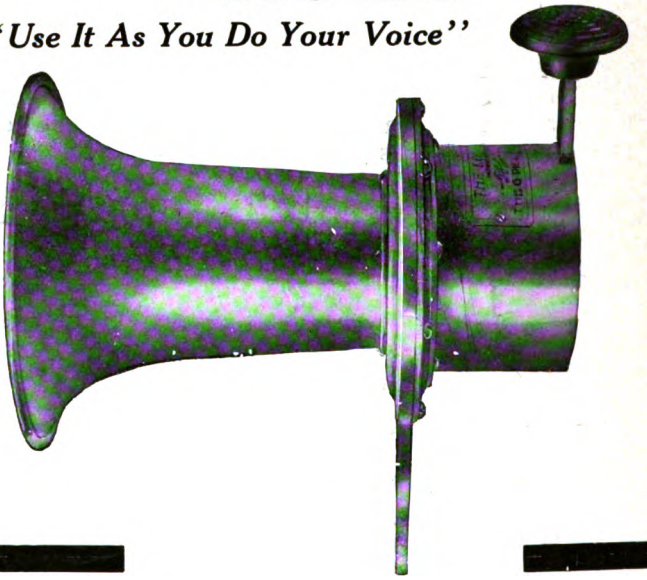
BACKED BY THE GUARANTEE OF A $5,000,000 CORPORATION

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J-M AUTOMOBILE ACCESSORIES

THE LONG HORN

"Use It As You Do Your Voice"



Profit On Sale Free and Clear of Any Deduction

THERE is nothing in the Long Horn to get out of order—nothing that requires any attention. Your first profit—a substantial one—is free and clear. No deductions for rewiring. The Long Horn is mechanically operated. No expense for installation. Can be attached in five minutes.

A dependable warning signal that never goes wrong. The Long Horn produces a lusty, sonorous note, modulated at will. You use it as you do your voice—to suit the occasion.

Actuating mechanism is practically wear-proof. All gears are machine cut and points of contact specially hardened. One piece, seamless projector. Simple but sound construction that never fails.

You will sell more Long Horns than any form of motor-driven signal. A demonstration of the Long Horn's warning quality convinces your customer that it is equally if not more effective than the best motor-driven signal. In nine cases out of ten you only need to point out its absolute reliability as opposed to the electric signal, to close the sale.



Junior Long Horn
Model J. S., Price $10.00

This Guarantee Protects You and Your Customers

The H. W. Johns-Manville Co. guarantees the Long Horn to be free from defects in material and workmanship, and will replace, free of charge, without question or quibble, any horn or part found to be defective.

Get our special dealer proposition today.
Write nearest branch.



Motorcycle Model "J.M."
Price $10.00

BACKED BY THE GUARANTEE OF A $5,000,000 CORPORATION

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J-M AUTOMOBILE ACCESSORIES

J-M (MEZ-GER) Soot-Proof Spark-Plug

TO make satisfied customers — the kind that confine their purchases to YOUR STORE, sell them the J-M (Mezger) Soot-Proof Spark Plug.



Millions of J-M (Mezger) Soot-Proof Spark Plugs have been sold since they were put on the market more than twelve years ago. Over 400,000 of the leading cars are now equipped with them.

This shows the satisfaction they are giving. And don't forget that back of them is the H. W. Johns-Manville Co., with its established country-wide organization which assures you of prompt deliveries and guarantees satisfaction.

Soot, the root of all plug troubles, will not collect at the end of the J-M Spark Plug because the porcelain insulator or "petticoat" extends to the end of the outer shell, where it is exposed to the full heat of combustion. This prevents carbon collecting because the intense heat burns it up.

The porcelain used in the J-M (Mezger) Soot-Proof Spark Plug will withstand rapid change of temperature. Even when heated red hot and thrown into water it will not crack. This is a severer test than would ever be encountered in actual service.

J-M (Mezger) Soot-Proof Plug is manufactured under the basic patent license concerning this form of construction.

Here's Your Guarantee

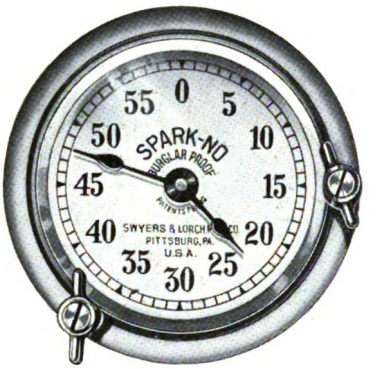
We will replace any J-M (Mezger) Spark Plug that may prove defective to your customers, or we will refund purchase price. Here is an iron-clad guarantee issued by a $5,000,000 company that absolutely protects you.

Write for Booklet and Dealers Prices

"Spark-No" Burglar Alarm Combination Automobile Lock

"SPARK-NO" is designed for the purpose of controlling the ignition of automobiles, motorcycles, motor boats, or any vehicles driven by gasoline engines or electric motors.

It operates by a combination which can be set by the owner and can be very easily changed at any time he may desire.



"Spark-No" operates by breaking all connections with the coil, which can be grounded through the lock, thereby cutting out all means of starting with batteries.

When any person not knowing the combination, attempts to start an automobile equipped with this locking device the current, instead of going to the coil, is reversed and goes to a loud alarm bell, which rings continually when the switch is thrown on and the combination broken, notifying you that some unauthorized person is tampering with the car.

The alarm can also be connected to an electric horn with the same results.

There is also a direct high tension ground connection made through this lock which throws out the magneto. This eliminates any possible chance of spinning the motor direct on the magneto.

Another very important feature about "Spark-No" is that the Running Combination is entirely different from the Starting Combination.

Our reason for having the Running Combination different from the Starting Combination is that any person riding with you and seeing your Running Combination would not be able to take your car and start it.

"Spark-No" does not lock the wheels or gears and the car is readily removable in case of fire or any emergency.

The equipment consists of lock, bell and installation wire.

"Spark-No" Motor Cycle Lock

DESIGNED for the security of motorcycle owners. Prevents theft or tampering with machines. Positively grounds the magneto so that the motorcycle cannot be operated by its own power. Made in special casings to fit any motorcycle. Easy to adjust—absolute in action. Sure to be a big seller.

Write Us for Special Dealer Terms

BACKED BY THE GUARANTEE OF A $5,000,000 CORPORATION

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J-M AUTOMOBILE

JONES SPEEDOMETER PLUS



Sell your customer a Jones-Speedometer and *your* worries are over.

Note the J-M Tag that guarantees mechanical perfection and national service.

Jones Speedometer

SPEEDOMETER worries—you have had them. Repairs, replacements, adjustments have taken up your time when it could have been more profitably spent elsewhere.

Turn over a new leaf. Ask to have your cars equipped with Jones Speedometers. SELL YOUR CUSTOMERS JONES SPEEDOMETERS and dismiss from your mind all repair and replacement problems.

Sold Under J-M Guarantee

Jones Speedometers are sold under a positive guarantee. EVERY INSTRUMENT BEARS THE GUARANTEE TAG OF THE H. W. JOHNS-MANVILLE CO. This guarantee insures you and your customer against any mechanical defect or structural weakness of the instrument. It is a guarantee as broad as all out doors. It means every Jones Speedometer must be a perfect instrument.

Guaranteed Service Also

In addition to this guarantee of mechanical excellence the guarantee of Johns-Manville National Service is included. With 49 Branch Service Stations and 589 direct representatives the H. W. Johns-Manville Co. is prepared to furnish a higher grade and more widely adequate service than any other speedometer manufacturer can possibly furnish.

—and more branches and more representatives will be added as soon as necessary.

What It Means to You

You sell the Jones Speedometer with a positive guarantee. YOU ARE RELIEVED of all service care and responsibility AFTER the sale is made, and that responsibility is assumed BY THE H. W. JOHNS-MANVILLE COMPANY, with its long career of business prestige and success.

Sell Jones Speedometers!

Our special dealer proposition will interest you. Write for particulars.

BACKED BY THE GUARANTEE OF

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ACCESSORIES

H.W. JOHNS-MANVILLE SERVICE

49 Branch Service Stations
589 Direct Representatives

—insure every owner of a car equipped with Jones Speedometer adequate service in any part of the United States or Canada.

No other speedometer manufacturer can honestly promise such universal service.

Geared to the Truth

CENTRIFUGAL force—a principle as absolute as the law of gravitation—makes the Jones Speedometer the MOST ACCURATE speed recording instrument.

A mile is definite. Your speed is definite when measured by a Jones.

—and a Jones Speedometer is most easily read. Note the large hand, the clock faced dial and the figures unshaded by the rim.

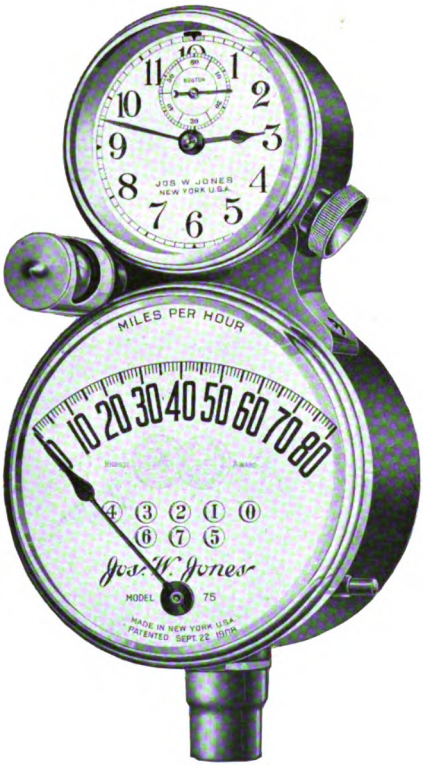
The Jones has fewer parts than speedometers of the magnetic type. It is less likely to get out of order.

Tests made by Columbia University experts, and at the Armour Institute of Technology prove that Jones Speedometers are least affected by temperature.

Vibration, magnetic influences have no effect on the Jones. It is dust and waterproof.

A special feature of the Jones is the instantaneous trip reset on the Odometer, a convenience possessed by no other speedometer.

—and an H.W. Johns-Manville Co. guarantee of mechanical perfection and of national service accompanies every Jones Speedometer.



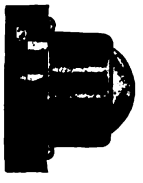
OF A $5,000,000 CORPORATION

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J-M AUTOMOBILE ACCESSORIES

J-M Mobilite Electric Lamp

YOU can sell J-M Mobilite Electric Lamps to a big percentage of car owners because they offer a desirable alternative between rattling, evil-smelling oil lamps and the installation of an expensive electric lighting system.



J-M Mobilite Electric lamps operate on dry batteries, giving an unusually brilliant light which cannot blow out; while their first cost is only about one-third the price of the cheapest standard electric equipment now obtainable.

A complete car outfit, consisting of two No. 1 J-M Mobilite Set-in Lamps for the dash-board, one No. 1 lamp for inside of dash-board illumination and one No. 2 tail light, with the necessary wire for installation, can be sold at $12.00.

This outfit will operate on six 30 Ampere J-M Dry Batteries and run intermittently from 300 to 420 hours at about one-third the operating cost of standard electric equipment.

J-M Mobilite Electric Lamps are strong and durable. The sockets are made of hard, vulcanized rubber which is practically indestructable. They are fitted with powerful lenses and reflectors and carry special tungsten bulbs. In all lamps, except the No. 2, the switch is self- contained and positively cannot get out of order. Worn out or broken bulbs can be renewed in a few moments.

J-M Mobilite Electric Lamps are easy to install. Their distinctive appearance lends an air of refinement to any car.

The sale of J-M Mobilite Electric Lamps is by no means restricted to the users of automobiles, as a demand for these installations has already been created for use on motorcycles, motor boats, yachts, in garages and camps, and, in fact, for every purpose where the use of oil lamps is attended by inconvenience or danger.



J-M Mobilite Head Light

Booklet and Prices to the Trade on Request

J-M Mobilite Automatic Signal System

THE J-M Mobilite Automatic Signal System is so obviously necessary to all who drive in traffic after dark, especially in cars with fully enclosed Berlin or Limousine bodies, that your customers cannot fail to recognize how greatly their safety will be increased by having the System installed upon their cars.



The J-M Mobilite Automatic Signal System displays an arrow in white light which indicates to the driver of any vehicle behind the car that a turn to right or left is about to be made. These signals appear automatically as they are actuated by a contact device attached to the steering gear. The word "Stop" appears in red whenever the clutch pedal is pushed out, actuated by a contact device attached to same. These contact devices are entirely self-contained and are waterproof. The boxes can be filled with soft grease.

The System complete sells at a good profit for $15.

Shall We Send Booklet and Dealers Prices?

"Noark" Enclosed Fuses

THESE fuses are made up to the high standards maintained for all the H. W. Johns-Manville Company products and provide another accessory that insures satisfied customers.

Special "Noark" Enclosed Fuses with "indicator" to show when fuse has blown, have been designed for the protection of automobile electric lighting circuits.



"Noark" fuses operate with no arc or flash. They are extremely advantageous on automobiles, where an exposed flash might ignite explosive gasoline vapors.

Occupying minimum space, with working parts gauged to a ten thousandth part of an inch, "Noark" Fuses insure absolute reliability of operation under overloaded or short circuits.

Ask for Booklet and Prices to Dealers

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LE ACCESSORIES

J-M Mobilite Au
Signal Syste

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The System complete with

Should We Send Booklet and Inf

"Noark" Enclosed

THESE fuses are made to the standards maintained by the Manville Company products other accessory that bears

Special "Noark" Enclosed Fuse

automobile electric lighting circuits

"Noark" fuses operate well in are extremely advantageous in an exposed fuse might give off vapors.

Occurring current rises rapidly to a ten thousand Fuses insure absolute protection overloaded or short circuits

Ask for Booklet and Price

F A $5,000,000 CORPORATI

J-M AUTOMOBILE ACCESSORIES

The Arnold Electric Vaporizer

WINTER is here and the majority of your customers are already experiencing starting troubles, resulting from low temperature. They will, therefore, be only too eager to buy any device which will relieve them of excessive cranking, whether performed mechanically by self-starters or laboriously by hand.



This circumstance creates for you an unequalled opportunity to sell—and keep on selling—the Arnold Electric Vaporizer.

The Arnold Electric Vaporizer overcomes all trouble in actually starting a cold motor, without first priming it.

The Arnold Electric Vaporizer consists of a case containing a series of resistance coils. It is installed in, and becomes a part of, the hot air pipe connecting the fixed air intake of the carburetor with the exhaust manifold of the motor; the end on which the binding posts are mounted being furthest from the carburetor. The binding posts are then connected through a switch located at some convenient point, with the usual six-volt storage battery carried by the automobile.

By closing this switch, current passes through the coils, and in less than a minute a very high degree of heat is generated within the case. As the motor is turned, this heated air is drawn over the spray nozzle of the carburetor, causing the gasoline to vaporize instantly and the motor starts on the first three or four quarter turns.

The vaporizer consumes about ten amperes at six volts, and as it only remains in action for a few minutes, the current consumption is very small.

The Arnold Electric Vaporizer is of special value on cars equipped with electric self-starters. Any electric starter draws at least 175 amperes, and if this amount of current is drawn from a battery for more than a few seconds at a time, the plates will gradually break down and lose their efficiency.

The Arnold Electric Vaporizer will enable the motor to start at once, preventing excessive consumption so that plate troubles are eliminated. This obviously means an enormous saving in battery repairs.

The Arnold Electric Vaporizer, complete with switch couplings and directions for attaching, sells retail for $10.

Get Our Introductory Offer to Dealers Today

The Arnold Electric Heating

THE Arnold Electric Heating Plug has so that the advantages of the Arn Vaporizer may be available to users o mobiles and consequently enormously number of consumers to whom such d sold.

In principle the Arnold Electric Heating same as the Vaporizer, except that the vapor itself is heated instead of the incoming air. This works successfully with small motors because much less heating surface is required to cause complete vaporization of their relatively small charge.



The Arnold Electric Heating Plug is placed in the intake manifold and may be operated from five dry cells or from a six-volt storage battery. It consumes only about four amperes of current.

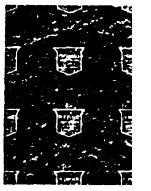
The Arnold Electric Heating Plug complete and directions for attaching retails for $3.50.

Dealer Prices and Booklet for the A

J-M Permanite Sheet P

YOUR customers know from expe few motorists are fortunate enou gether escape the annoyance due joints.

J-M Permanite Sheet Packing has lon ognized by engineers in other branches packing for high temperatures and pressures, whether for steam, water, air or gas, and it can often therefore be successfully employed where all other packings fail.



Composed of the highest grade of long fibred asbestos, "J-M Permanite" possesses the well-known heat resisting qualities of that materia special compounds with which it is c manufacture render the sheet remarkal and pliable.

J-M Permanite Sheet Packing has prov service to be extremely durable. It is lightest sheet packings made and on this cost per joint is relatively small. It reta 54 x 63 inches, at $2 per pound.

Warranty We wish to induce everyone v packing to try "J-M Permanit some joints in their automobile and if it does not we will gladly refund the price of the packing.

Write Nearest Branch for Booklet and D

BACKED BY THE GUARANTEE OF A $5,000,000 CORPORATIO

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J-M AUTOMOBILE ACCESSORIES

J-M Non-Burn Brake-Lining

NINE out of ten of your customers realize that their safety—and the safety of their car—depends upon the brakes. When a car owner tells you that he has brake trouble, induce him to use J-M Non-Burn Brake Lining. Here is a brake lining that adds to the safety and comfort of any car. It grips the drum without shock or jar as soon as pressure is applied and with power sufficient to lock the wheels almost instantly if desired. In fact, its use may well be said to solve the vital problem of car control.

In addition to this it saves the time spent on renewals because one J-M Non-Burn lining will actually outlast several ordinary linings.



The frictional contact between metal and asbestos is acknowledged to produce the most effective braking material known, and J-M Non-Burn Brake Lining is composed of long, tough fibres of pure asbestos, free from all organic substances, reinforced with strong brass wire. This makes it positively proof against the influence of intense frictional heat, oils, water, gasoline, grit, etc.

Don't accept cheap substitutes. Look for the name "J-M Non-Burn" plainly stamped on this lining.

Write for Booklet and Prices to Dealers

J-M Dry Batteries

SELL the Battery that brings you trade. Nearly every time you sell a J-M Dry Battery to a stranger you make him a regular customer.

J-M Dry Batteries build up trade because they are guaranteed to give satisfaction, and battery users everywhere are learning that no other cell gives such all-round satisfaction.



Unlike ordinary batteries of high amperage, the J-M is not subject to rapid deterioration—a fact fully recognized and appreciated by all users of batteries subjected to severe service conditions. Each battery is covered by the following

Guarantee **If J-M Dry Batteries do not prove satisfactory, we will supply new batteries without cost, issue credit for same or refund purchase price including transportation charges.**

The moment you begin to sell J-M Dry Batteries you put your battery business on a better paying basis.

Batteries are made in three capacities—20, 30 and 35 amperes; 1½ volts per cell.

A trial barrel will be shipped the day your order is received.

Ask Nearest Branch for Dealer Prices and Booklet

Other J-M Automobile Accessories

Carter Carburetor
J-M Mobilene Sheet Packing
No. 629 Asbestos Yarn
J-M Vulcabeston Rope Packing
J-M Mogul Valve Packing
J-M Permanite Washers
J-M Red Generator Tubing
J-M Metallo Metal Polish
J-M Leak-No
J-M Asbestos Motor Cement
J-M Asbestos Roll Fire Felt
Manville Fire Extinguisher
J-M Success Fire Extinguisher
J-M Fyro Fire Extinguisher
J-M Friction Tape

BACKED BY THE GUARANTEE OF A $5,000,000 CORPORATION

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This monogram stands for all you can ask in a motor car

These Facts About the Chalmers Business Tell Why It Pays to Sell Chalmers Cars

HERE are some of the reasons why Chalmers dealers make money, why they have no lean years, why they stay Chalmers dealers year after year. These facts should make clear to every dealer that the company to tie to is one like the Chalmers—a company that has grown through merit.

The business of the Chalmers Motor Company and of its dealers has developed to its present volume simply because this company has built and sold ***good, serviceable*** cars at prices people are ready to pay; because the Chalmers ***business*** has been run as a business and not as a "game."

A "Square Deal" Policy

The policy of the Chalmers Company has been and always will be, to give its customers and its dealers a "square deal," to give full value for the money it receives, always to render reasonable service that will make the buyers of Chalmers cars boosters for future business.

To this policy is due the enthusiasm of some 40,000 owners of Chalmers cars. Seven years of continuous striving to build the finest possible motor car at popular prices, and to ***serve*** the buyers of these cars, have borne fruit. Today no dealers are more loyal than Chalmers dealers —none are more successful or of a higher commercial rating.

And Chalmers owners everywhere are proud to be known as Chalmers owners. For each year Chalmers cars have been up-to-date, have given high quality at a popular price. In actual service they have made good and so have made possible bigger production and greater prestige.

Chalmers Reputation Means Bigger Profits to Dealers Each Year

Chalmers cars sell more readily and in larger quantities each year. This is due to the splendid service they have given in the past and the reputation of the Chalmers Company and Chalmers dealers for thorough reliability.

The prestige of the Chalmers dealer gives him not only quicker, easier and consequently more profitable sales than is the case with those who handle most other cars—it means also better satisfied customers, valuable word-of-mouth advertising, and a permanent and growing business.

The increasing demand for Chalmers cars means the maintenance of Chalmers prices. The dealer makes his full profit on every car, at every season of the year. This year, more than ever before, Chalmers cars sell all the year round.

There is still room for more Chalmers dealers. We have now nearly 800 dealers, but we want wider distribution, through direct representation and more intensive work in some of the territories.

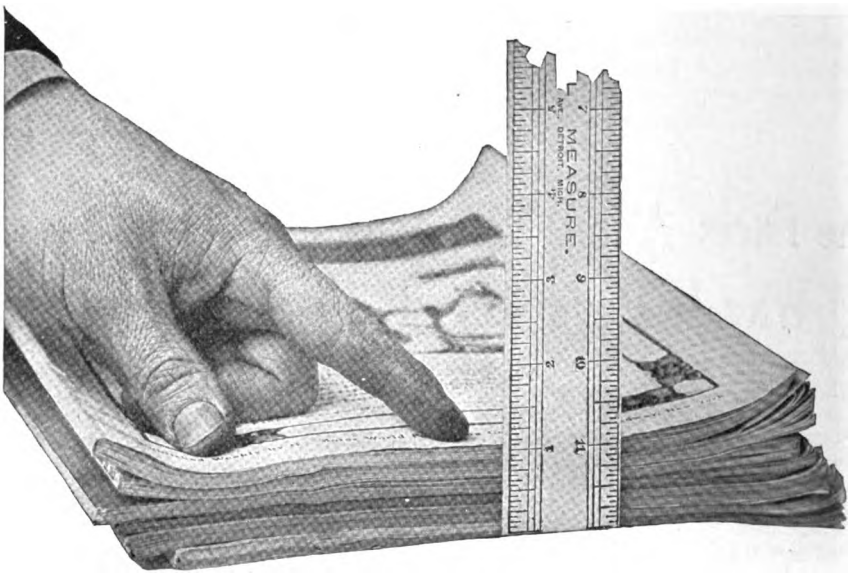
It will be worth money to you to learn about the Chalmers proposition to dealers. The largest part of the 1914 selling season is before you and we urge you to act at once. Send us the coupon below and you will hear from us at once in regard to your territory.

Mr. Percy Owen, Sales Manager,
Chalmers Motor Co.
Please tell me how I can secure representation of the Master "Sixes" in my territory.
I now handle.....
Signature .....
Territory .....

Chalmers Motor Company
Detroit, Michigan

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"BOWER SAVES POWER"



One Bower Roller Cannot Differ From Another by 1-20th the Thickness of This Sheet of Paper.

The amazing endurance of Bower Roller Bearings is not accidental. It results from a conscientious attention to even the slightest detail of manufacture.

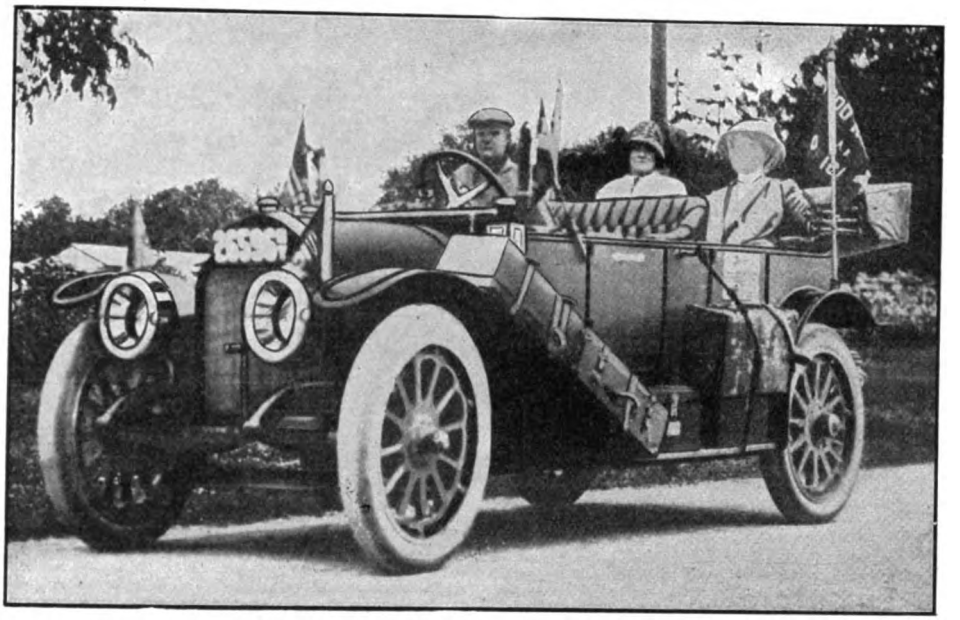
For instance, the rollers of Bower Bearings are accurate to two ten-thousandths of an inch. Think of what this means. The sheets of paper upon which Motor World is printed run about 250 to the inch. Every Bower Roller is accurate to within 1-20th the thickness of a single sheet.

"Trifles make perfection, but perfection is no trifle"

B OWER ROLLER BEARING COMPANY
DETROIT, MICHIGAN

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"BOWER SAVES POWER"



Crossing the Continent on Bower Roller Bearings

To cars equipped with Bower Bearings a transcontinental tour is a mere incident. The Pathfinder "40" shown above was driven from coast to coast and return three times in 1912. In the summer of 1913 it surveyed two more transcontinental routes for the A. A. A. and the U. S. Government, and now has just completed its fifth round trip across the Continent.

The Bower Bearings used in the front wheels of this car made these trips across the Continent with neither replacement, adjustment or attention of any kind, except for lubrication.

Bower Roller Bearings never need adjustment

BOWER ROLLER BEARING COMPANY
DETROIT, MICHIGAN

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—*and* Now We Are Ready

for More Dealers and Greater Distribution

The First Improvement

Three years ago we began the manufacture of pneumatic automobile tires by the Miller Method. This method embodied the only great improvement made in the process of tire building since the beginning.

The tire using public were quick to recognize the merit of this new method. These tires sprang into instant popularity. From the first our sales increased by leaps and bounds.

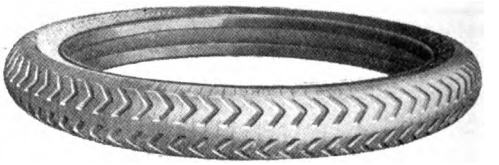
200% Increase

The fiscal year ending October 1st, 1913, showed an increase of 200% over the same period of a year ago.

We have been too busy filling orders and increasing facilities to look after the selling end. For 22 years we have manufactured rubber goods. Our product has a globe circling reputation. For instance, last year we made 2,000,000 pairs of rubber gloves. Most of them surgeons' gloves. The best on earth.

The unprecedented increase in our tire business called for a readjustment of our entire plant. New buildings had to be built—our plant today has twice as much floor space as it had three years ago. New equipment bought and installed. In fact a completely new organization had to be wrought on comparatively a moment's notice.

Miller Tires



One Cure Wrapped Tread

Capacity Quadrupled

These new process tires are bound to dominate and revolutionize the industry.

We have doubled our capital, tripled our capacity, reorganized our entire corps, and are ready to begin the march toward the big things that lie before us.

Territory Still Open

There is still some territory open. An exclusive agency proposition. One that protects you against price cutting or unfair competition. You control your own territory, and your own price, and we stand behind you, factory and selling force to help you get your share of the big business that is bound to come. A post card will bring you all particulars. Hold that contract in abeyance, and write now—you cannot afford to do otherwise.

See These Tires at the Show

These super-tires will be exhibited at the New York Show — Space D-1, the third floor of the Palace. There you will be able to see the tire, examine it and secure full information regarding agency proposition.

Send for This Book

There is a book—it is more than a catalogue—it's a Tire Text Book. It contains more inside information on tire building than can be secured from any source. We will send it prepaid on request.

The Miller Rubber Co., Akron, Ohio

New York Branch: 256 West 55th Street

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THE THREE HUNDREDTH MOTORIST
AND HIS CAR

LAST year the records showed a production of about 300,000 motor cars. Approximately one car for about every 300 people in the United States.

The Locomobile production was only 4 cars a day, the maximum limit prescribed by our policy.

Only one person in 90,000 bought a Locomobile.

Only one out of every 300 motorists.

This man, the Three Hundredth Motorist, buys the Locomobile because of its quality. Not because of its price, because that is high. And the reason why only one motorist in 300 can buy the Locomobile is because it is made in strictly limited quantities to insure quality.

We adopted the policy of limited production, quality instead of quantity, fourteen years ago, when we set out to make "The Best Built Car in America."

Quantity and quality do not work well together for the attainment of the ideal high-grade motor car. Quantity does not necessarily eliminate quality. It merely fights against it, hinders it, forces it down. As quantity increases beyond a critical figure, quality decreases and the product loses distinction.

Quality instead of quantity is but a part of our policy. The concentration of a rather unusual organization on a limited production is only one of the means to gain an end.

Our plant, for example, was designed and erected for the sole purpose of developing the Locomobile. Its location at Bridgeport, Connecticut, is an important factor. The finest mechanics in the country are in our section of New England. They inherit ability to work on quality products. Our equipment is peculiar, expensive, special, and very, very complete. We could not successfully build any other type of car than the Locomobile. The Locomobile could not be built in any other plant.

Further: each individual car receives intimate attention from company officials, close watching by department heads and factory foremen. Our testing methods are exceedingly expensive, but they enable us to make each Locomobile just the same as every other Locomobile and to *prove* it.

If we were to increase our output the personal attention we give to every car would have to relax and the quality would be lowered. Quality is not a new thing, new born of red tape and rules; it is an old fashioned thing, always born of personality.

Toledo swords and Milanese armour were medieval quality products wrought by personal skill, personal enthusiasm, personal supervision. Eliminate the personal element from a product and you eliminate much of the quality. There can only be just so many responsible officers in any company. Increase the production and the personality of these men is spread out and diluted.

Most Locomobiles are personally addressed when they leave our plant. We know where they are going and to whom they are going. The president, vice-president, factory manager, sales manager and other officials *know* these cars and work over them until they are right.

Every Locomobile official is active in the company. The offices are *in* the factory to be close to the product. There is no separate "Executive Building."

Thus, limited production, peculiar facilities and constant personal attention work for quality in the Locomobile. The organization cherishes ideals, its officers and department heads have worked together, practically intact, for fifteen years. This *esprit de corps* has its stimulating and valuable effect on quality.

The perfect condition for creating quality in a motor car is to produce it in one plant; completing all the operations under one roof, from raw material to finished product. No automobile company strictly does this. In the Locomobile plant ideal conditions are probably more closely approached than in any other. The Locomobile is *our* car. Some of the pains that we take may be unnecessary. However, fifteen years of experience has shown us that the only way to build the highest grade car is to take all possible pains. For example, even the nuts and bolts for the Locomobile are made by its artisans, not purchased. No one questions the method of makers who buy good ready-made nuts and bolts, quite the contrary. The maker who is building a car to fit a price must contrive, must cut corners. The fact that he does so, may not cause trouble for the users of his cars. Though the working out of the Locomobile policy involves extra trouble and greater expense in such details, the result means greater insurance for the Three Hundredth Motorist. Complete relaxation in motoring is only possible in a car in which your confidence is as great as your comfort.

We know the Locomobile has not yet reached the ideal, but our faith is such that we cannot see why anyone who can afford it should buy any other car.

Because of the limited production, the character of the organization, the conditions under which the car is made, the pains given to construction—the Locomobile becomes the logical car for the Three Hundredth Motorist.

The Locomobile Company of America

Bridgeport, Connecticut

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The Thomas B. Jeffery Company
Jeffery
Kenosha, Wis. U.S.A.

What the Head Mechanic



THE biggest dealer in a real live town wired the Jeffery Company the other day, asking for consideration as a dealer for his locality. Then he got on the train and came to Kenosha.

Before he left, his head mechanic said to him, "Now look here! Don't you be deceived by advertising. You find out these things about this car before you take it on."

Then he wrote out a list of questions, which the dealer placed in his pocket, and when he reached the factory it was handed to the factory manager. The list as returned, with the answers given, appears below. The dealer closed for the Jeffery line immediately after seeing the factory and the car.

Here Are the Questions and Answers

If you think of any others, just fire them in. They are welcome. There is no question about the Jeffery car that you can ask that we are not proud and even anxious to answer.

Q. Is self starter dirt and water-proof?
A. Yes.
Q. How about cut-out and control of charge?
A. Automatic, easily adjustable to meet conditions.
Q. Is the wiring simple?
A. Yes, simple and carefully protected from oil and grease.
Q. Are dry cells used?
A. Yes, for starting.
Q. Is gasoline tank seamless?
A. Not seamless but of very rigid construction. Seams double lapped throughout.
Q. Is gasoline line carried in the proper manner?
A. Yes, carefully protected by frame side rails.
Q. How are spring hangers mounted on frame?
A. Spring hangers of generous proportions are securely riveted to main frame.
Q. Are spring shackles loose and noisy?
A. No. Spring shackles are fitted with castellated nuts and cotter pins to insure rigidity.

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old the Boss To Do!

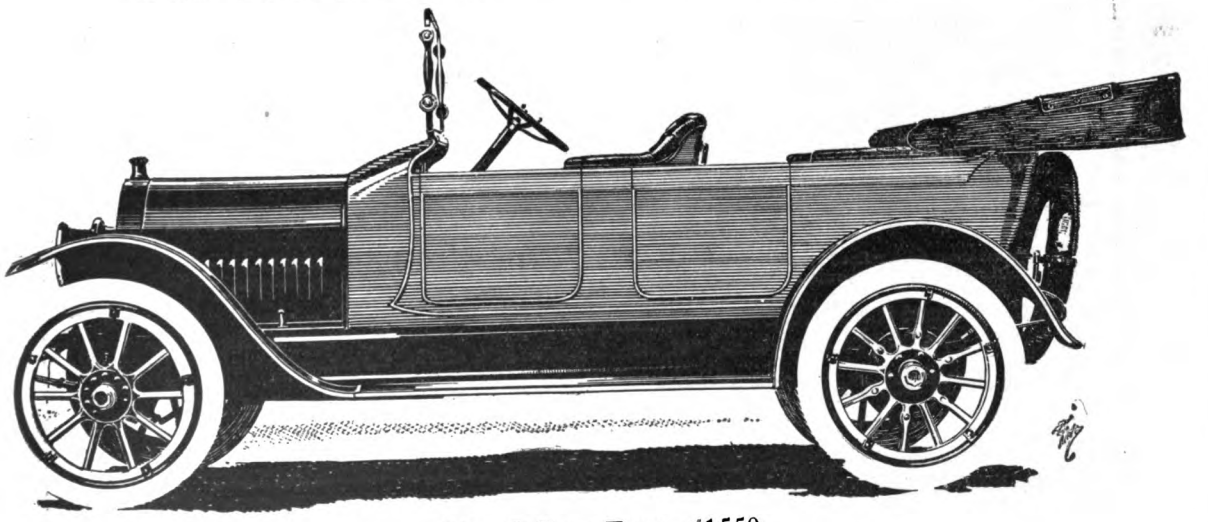
Here Are the Questions and Answers (*Con't.*)

Q. Are springs bushed?
A. Yes.
Q. How are spring bolts lubricated?
A. Zerk compression grease cups. High grade.
Q. How is body fastened to frame?
A. Firmly bolted through heavy oak sills and frame side rail.
Q. How is fan driven?
A. Adjustable V belt, insuring positive drive.
Q. Is magneto accessible?
A. Yes, very easily so by raising left side of hood.
Q. How is pan put on?
A. Securely bolted to frame side rails, crank case flanges and cross girders.
Q. What are the makes of the front and rear axles?
A. Vanadium steel drop forged I beam front, Jeffery manufacture, weight 29 pounds. Salisbury full floating rear on Jeffery Four. American full floating rear on Jeffery Six.
Q. What kind of steering gear?
A. Gemmer, strictly high grade, used generally by manufacturers of the higher priced cars.
Q. How is the steering gear mounted on frame?
A. Securely bolted to reinforced side rail.
Q. Are gears noisy in fourth speed?
A. No. A little more quiet than any we know.
Q. How is leg room in driver's seat?
A. Ample—front vestibule being very roomy.
Q. Are shifting levers in the way?
A. Levers are so located as not to interfere in any way with entering from either side of car.
Q. What kind of demountable rims are used?
A. Funk, straight side, easily removed.
Q. What kind of top and curtains?
A. Top of high grade "Neverleek" material with curtains permanently located, rolling up inside of top.
Q. Is wind shield a good one?
A. Yes, easily adjustable rain vision shield of Jeffery manufacture. Shield is set into cast sockets on cowl, doing away with the necessity of stay rods.
Q. Are radius rods used?
A. No. A single torque rod in center.
Q. How is front end of torque suspended?
A. Spring cushioned ball joint fastened to cross member of frame.
Q. What about fenders?
A. Hand rolled, one piece crowned fenders—spot welded to fillers and fender brace, doing away with visible bolts or rivets.
Q. How long will starter crank motor with one charge of battery?
A. Under normal conditions from six to ten minutes.
Q. What kind of storage battery is used?
A. U. S. L. battery.
Q. Are parts accessible?
A. Yes, very easily so by removing floor boards of the vestibule.
Q. Does car look as good as the picture?
A. Better. The Jeffery body appeared at the Paris show when stream-line was popular. It immediately took the eye of the Parisians and was brought to this country by Rothschild, and first introduced to the American public by Jeffery.

The Thomas B. Jeffery Company, Jeffery, Kenosha, Wis. U.S.A.

The Thomas B. Jeffery Company

Main Office and Works : : : Kenosha, Wisconsin



The Jeffery Four, $1550

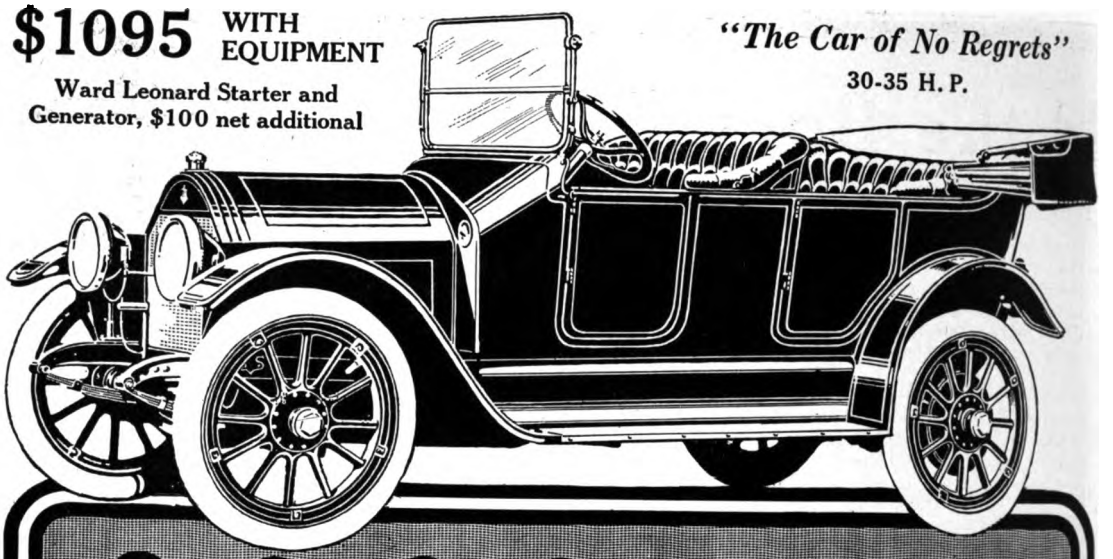
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$1095 WITH EQUIPMENT

Ward Leonard Starter and Generator, $100 net additional

"The Car of No Regrets"

30-35 H. P.



KING

Only Dealers of Proved Ability Need Apply for KING Agencies

We cannot afford to place our car in the hands of an agent who lacks the experience to properly represent it, and thereby risk the KING'S reputation in a community. Reliable dealers are invited to consider the following five points:

I. The KING MOTOR CAR COMPANY sells no stock, and pays cash on all purchases. It reserves for itself only a small fixed profit, returning the balance of its earnings for the betterment of its car.

II. The KING gives greater value in features, power, style, comfort, durability, economy of operation, and equipment, than is elsewhere offered at near price.

III. Our car has a solid, refined appearance, and its vital parts are made by the same specialists who manufacture for the most expensive cars. The KING is distinguished by a cantilever rear suspension of proved superiority, which makes shock-absorbers unnecessary.

IV. Our "one chassis" policy means the concentration of the entire organization upon the production of one perfect unit of valve-running mechanism.

V. Our selling proposition is liberal, we make prompt deliveries, and our advertising is generous and far-reaching.

If you can meet the KING'S requirements, the KING can meet yours—as it will prove to be everything you could desire in a car of its class.

KING MOTOR CAR COMPANY, 1300-1324 JEFFERSON AVE. DETROIT, MICH.

New York Agency and Showroom, Broadway at 52nd Street

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Listen to the Truth About Motors

MOLINE-KNIGHT

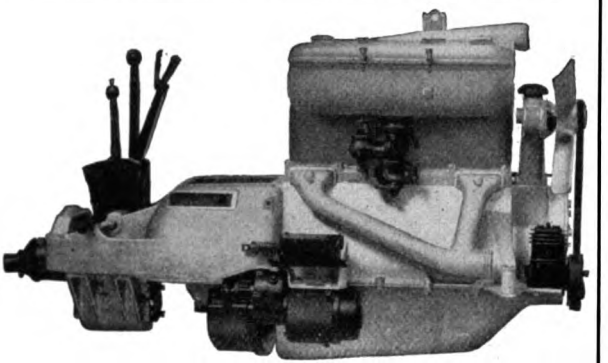
$2400

More Power

More Flexibility

More Economy

More Silence



Carburetor side of Moline-Knight motor—"clean as a whistle"—Moline-Wagner Electric Starter, Schebler carburetor, combination breather pipe and fan support, third center control lever for self-starting.

$2400

Four Cylinders

Guaranteed 50 B. H. P.

128 Inch Wheelbase

Five Passenger

The "Four" That Makes the "Six" Unnecessary

When you drive a Moline-Knight The first time you sit behind a Moline - Knight engine you will exclaim—"It feels differently." You will be fascinated by the immediate getaway, because as the gas is fed into the motor the response is instantaneous.

The positive action of the sleeve valves, the smooth even pull—a car with quick, easy acceleration, without laboring, with no racking vibration, no pounding, no rattling of cams, no humming of gears—no noisy valves—just a velvety feeling of steady resistless power will be a new and delightful sensation to any one used to the old poppet valve engine.

No carbon—no valves—no grinding—absolute silence all the time—and the longer the engine remains in use the better it becomes.

Because The superiority of the Moline-Knight motor over any poppet valve design lies in the fact that the efficiency and durability of the Knight system is not effected by high pressures. The explosion does not shock it at any point because the Moline-Knight motor is balanced against lateral pressure.

In the sleeve valve motor is combined silence, endurance and reliability of the small poppet valves and low compression with the high efficiency of the high compression large valves, powerful springs and precipitous cams of the racing poppet valve motor—consequently, the Moline-Knight engine has all the advantages of both types—and is therefore strongest where the poppet valve is weakest.

Write for our "Advance Information Folder." Dealers: wire or write quick. Anchor to a rock-ribbed institution.

Moline Automobile Co., 300 Maple Ave., East Moline, Ill.

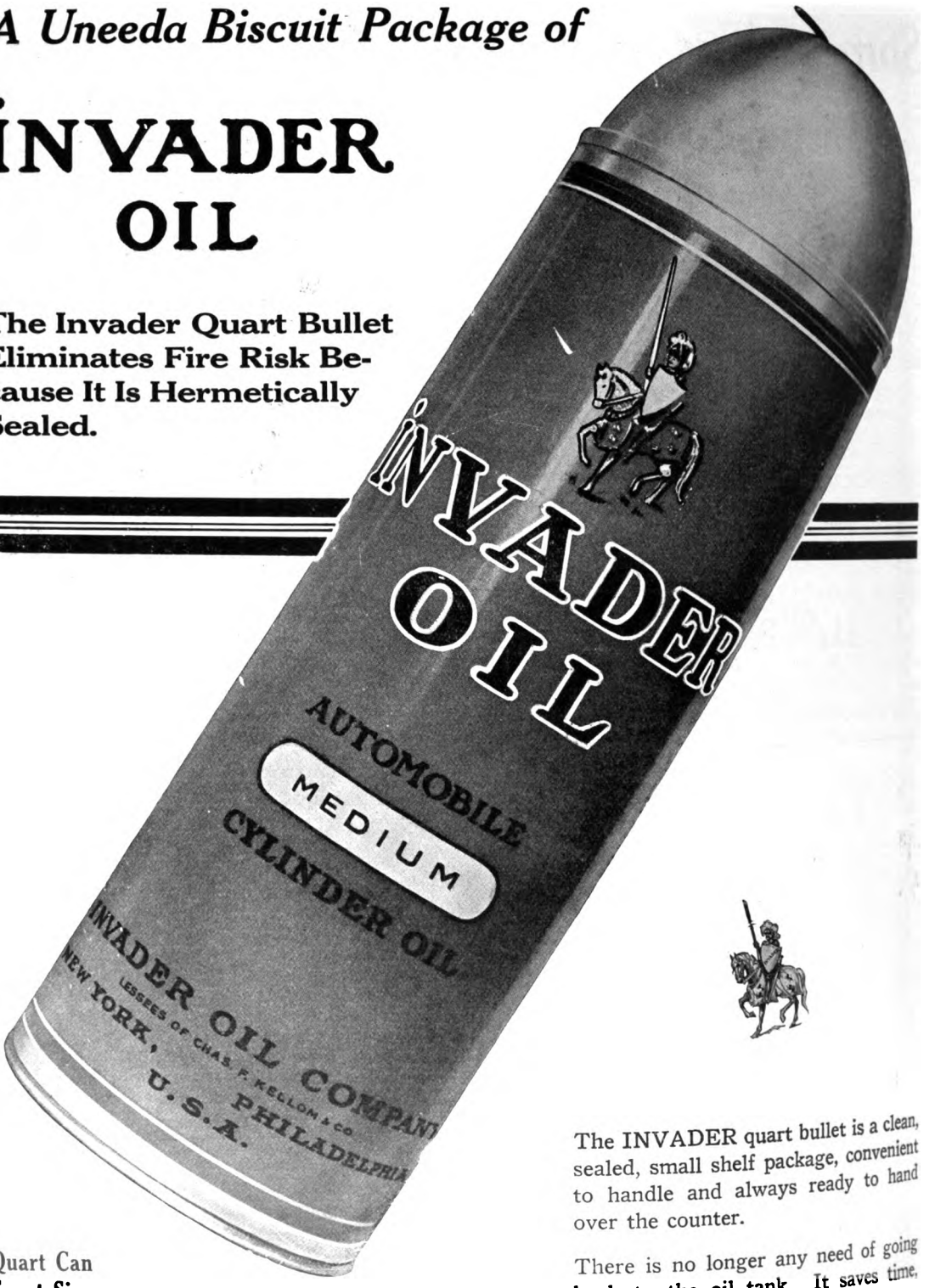
MOLINE KNIGHT

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A Uneeda Biscuit Package of

INVADER OIL

The Invader Quart Bullet Eliminates Fire Risk Because It Is Hermetically Sealed.



Quart Can
Exact Size

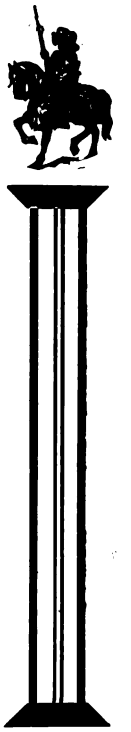
The INVADER quart bullet is a clean, sealed, small shelf package, convenient to handle and always ready to hand over the counter.

There is no longer any need of going back to the oil tank. It saves time, trouble and money. There is neither waste nor dirt.

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Something more about---

INVADER OIL



INVADER OIL **will** leave a carbon deposit. So will every other oil.

INVADER OIL **will** smoke when it burns. So will every other oil.

When INVADER OIL is used it **may be** necessary to grind valves. Such certainly would be the case with every other oil.

A motor using INVADER OIL **can** overheat. So it can when any other oil is used.

A machine exclusively lubricated with INVADER OIL **will** eventually wear out. This would also be the case no matter what oil was used.

INVADER OIL is **not** a perfect lubricant, neither is any other oil. There is no such thing.

INVADER OIL, however, is chemically superior to all other oils. It will deposit **less** carbon, make **less** smoke, mean **less** grinding of valves, make a motor **less liable** to overheat, and will cause the machine using it to last **longer** mechanically than would be the case were **any** other oil used.

Remember that the superiority which is indicated by its better tests is a superiority which cannot be contradicted. INVADER OIL is better because its tests are better. There is no way of avoiding this fact.

FACTORIES
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES
BOSTON.....284 Columbus Ave.
WASHINGTON.....512 Kenois Bldg.
PHILADELPHIA.....113 Arch St.

EXPORT SALES AGENTS
Chipman Limited,
8-10 Bridge St., New York, U. S. A.

INVADER OIL COMPANY, Inc.
Lessees Charles F. Kellom & Co.
Main Office: 81 Broad Street, New York
NEW YORK CITY BRANCH: 1906 BROADWAY

TERRITORIAL AGENTS
Los Angeles, Cal...W. D. Newerf Rubber Co.
San Francisco Cal., W. D. Newerf Rubber Co.
Tacoma, Wash.....Union Motor Car Co.
Omaha, Neb.....Lininger Implement Co.
New Orleans, La.....Electric Appliance Co.
Detroit, Mich.....Boyer-Campbell Co.
Salina, Kan.....Lee Hardware Co.
Kansas City, Mo...Amer. Lub. & Supply Co.
Portland, Me.....James Bailey Company

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The Event of the Season

EVERY social function that brings together a representative company of men and women brings also an assemblage of representative motor cars. In a large measure every family is judged by the cars they ride in. Even the bride shares with the automobile which carries her away on her wedding journey the critical or admiring scrutiny of society. If her car is equipped with

THE RUTENBER MOTOR 1914 Six

its social recognition is assured. The new six cylinder Rutenber is the aristocrat among motors—the one motor whose supremacy is universally recognized and whose position is unchallenged. Judged by every standard of motor excellence, this achievement stands without a peer. Its efficiency, its silence, its power, its capacity for speed and endurance command admiration and inspire imitation.

You are cordially invited to view our exhibit at the Chicago Show. Space 26, Coliseum Gallery.

The Rutenber Motor, 1914 Six, costs somewhat more than other six cylinder automobile motors. It could not be what it is if it were cheapened in any way. But this slight increase in motor cost cuts little figure in the price of a high-grade motor car and it is borne by the manufacturer of the car rather than by the buyer.

You who aspire for intrinsic excellence and who know the value of genuine worth will serve yourselves best by selecting a car that is built around a RUTENBER Motor, 1914 Six.

Write for the Rutenber Book.

RUTENBER MOTOR COMPANY
MARION INDIANA

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Splitdorf "Ford Special" Plugs

are NEW and SPECIALLY CONSTRUCTED for the hardest kind of every day usage on FORD CARS.

SPLITDORF "FORD SPECIAL" PLUGS cost more than the average plug but they are WORTH MORE—they last longer and are really the cheapest.

The highest priced automobile as well as the most popular priced car must have the BEST PLUGS to get the BEST MOTOR EFFICIENCY, and SPLITDORF "COMMON SENSE" PLUGS have always been the standard for effective results.

Insist upon SPLITDORF "FORD SPECIAL" PLUGS. Long in body and specially adapted to Ford cylinder construction, they are easily recognized with hexagonal porcelains. Their insulation is high-quality imported mica and they are designed and manufactured to absolutely withstand the breaking-down effects of high tension current.

Write for "Ford Power Possibilities"—it's FREE

SPLITDORF ELECTRICAL CO.

ATLANTA, 10-12 E. Harris St.
BOSTON, 180-182 Mass. Ave.
CHICAGO, 64-72 E. 14th St.
DETROIT, 972 Woodward Ave.
KANSAS CITY, 1823 Grand Ave.
LOS ANGELES, 1226 S. Olive St.
NEWARK, 290 Halsey St.
NEW YORK, 18-20 W. 63d St.
PHILADELPHIA, 210-12 N. 13th St.
SAN FRANCISCO, 1028 Geary St.
SEATTLE, WASH., 1628 Broadway
LONDON BUENOS AIRES

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SAFETY FIRST



Five Bars and a Cross Tie—the Safety First Symbol

Five thick, tough Goodrich rubber fingers—

They dig down through mud, slush and ooze; they clean and grip the road. They stop the skid before it starts. They give you lower-cost mileage because of the extra thickness of rubber at the point of contact.

Goodrich Safety Tread Tires

Best in the Long Run—Best in the Short Stop

Don't experiment. Don't take chances. Look for the five bars and the cross-tie when you choose a non-skid tire.
Read the reduced prices below. Better still, tear out this price list and hand it to your dealer.

Don't pay more than the prices named here for the accepted *standard* non-skid tires:

Size	Smooth Tread Prices	Safety Tread Prices	Size	Smooth Tread Prices	Safety Tread Prices
30 x 3 - -	$11.70	$12.65	34 x 4½ - -	$33.00	$35.00
30 x 3½ - -	15.75	17.00	35 x 4½ - -	34.00	36.05
32 x 3½ - -	16.75	18.10	36 x 4½ - -	35.00	37.10
33 x 4 - -	23.55	25.25	37 x 5 - -	41.95	44.45
34 x 4 - -	24.35	26.05	38 x 5½ - -	54.00	57.30

There is nothing in Goodrich Advertising that isn't in Goodrich Goods

The B. F. Goodrich Co.
Factories: Akron, Ohio

Branches in All Principal Cities

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Quality Mohawk

"THE BEST TIRE—Not big production, not lowest prices."
That is our ambition. That is the policy back of the Quality Mohawk Tire.

"Quality" is Our Hobby

Quality Mohawk Tires

We believe you want a Tire that is proof against blow-outs: One that won't crack, won't fabric-separate, won't tread-separate: One that will give long wear and stand re-treading.

We make that tire. Smooth and Non-Skid. All types.



Quality Mohawk Tubes

We believe, too, that you want a tube that will give service: one that is pure gum: one that won't stretch out in hot weather, won't tear like paper: one that can be patched, and patched again and again: one that will vulcanize and retain its life and strength.

We make that tube. Red and Gray.

Mohawk Specifications

4 inch casings—the size most frequently overloaded.
Fabric: 17¼ ounce Sea Island—the best and strongest made.
Friction: Absolutely pure gum throughout.
Side Strip: Absolutely pure gum—floating stock.
Cushion: Absolutely pure gum—floating stock.
Tread: Straight compound base on finest rubber obtainable—tough and flexible—not an ounce of shoddy reclaimed rubber, or other cheapening materials.
Construction: **6 plies** and a breaker strip. Full molded, under heavy hydraulic pressure into one solid inseparable whole.
Hand Made: Made under the personal supervision of an experienced man—one who has the reputation of making the **best** tire in Akron.

We solicit correspondence from Dealers who want the exclusive sale of this kind of a tire and tube.

THE MOHAWK RUBBER CO., Akron, O.

New York Branch, 1864 Broadway

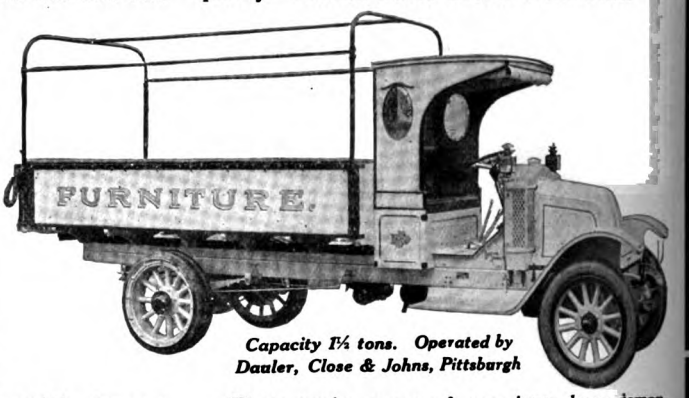
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Silent **Lippard-Stewart** Powerful

Trucks That Meet The Demand

"How am I to know why this truck or that is better than another?"

Not long ago this question was a common one, but at that time motor transportation was new and trucks of a diversity of types were untried. Then the purchase of commercial cars was largely a matter of confidence. But times have changed. Owners have been watching truck development. They have found out what amount of work a car can reasonably be expected to do under certain conditions. And, what is more, they now make it their business to know the relation of the type of truck, capacity and mechanism considered, to the service expected of it. In other words, THEY KNOW WHAT THEY WANT.

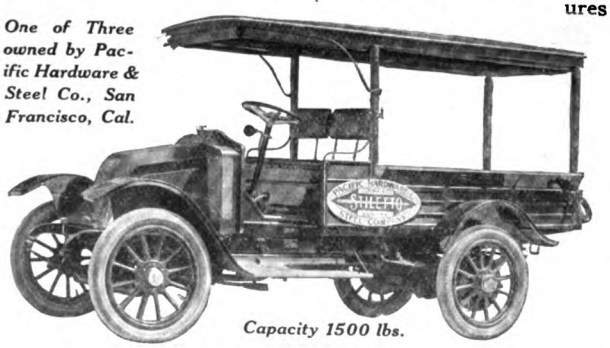


Capacity 1¼ tons. Operated by Dauler, Close & Johns, Pittsburgh

In a Lippard-Stewart truck, this public demand is given the credit it deserves, because its designers have their ears to the ground—quick to heed the trend of the times. For instance, the shortcomings of chain drive, the uncertainty and annoyance which it involved, its excessive wear and waste of power, opened the eyes of users to the advantages of the worm and gear, the success of which has long since been proved in the hardest service—London omnibuses for example. Now, in the Lippard-Stewart, the solution of former drawbacks is offered to American users in a rear axle of the highest quality—Timken-David Brown Worm-Drive.

Then again, years of experience have demonstrated that no longer can a touring car answer for a truck. Commercial vehicles require simplicity, reserve power, and much greater strength. Truck users want the smoothness, pulling power, and the low gasoline consumption of the long-stroke motor, common-sense automatic speed regulation, security and efficiency of the radiator, the choice of solid or pneumatic tires to suit conditions, the utmost safety—and in each essential the Lippard-Stewart measures up to the standard.

One of Three owned by Pacific Hardware & Steel Co., San Francisco, Cal.



Capacity 1500 lbs.

And so we might enumerate instance after instance. But the one point that investigation of Lippard-Stewart trucks makes evident is this: every separate part, every complete unit, every principle of design, embodied in their make-up carries with it the stamp of modern practice—the approval created by the highest type of service and voiced by popular demand.

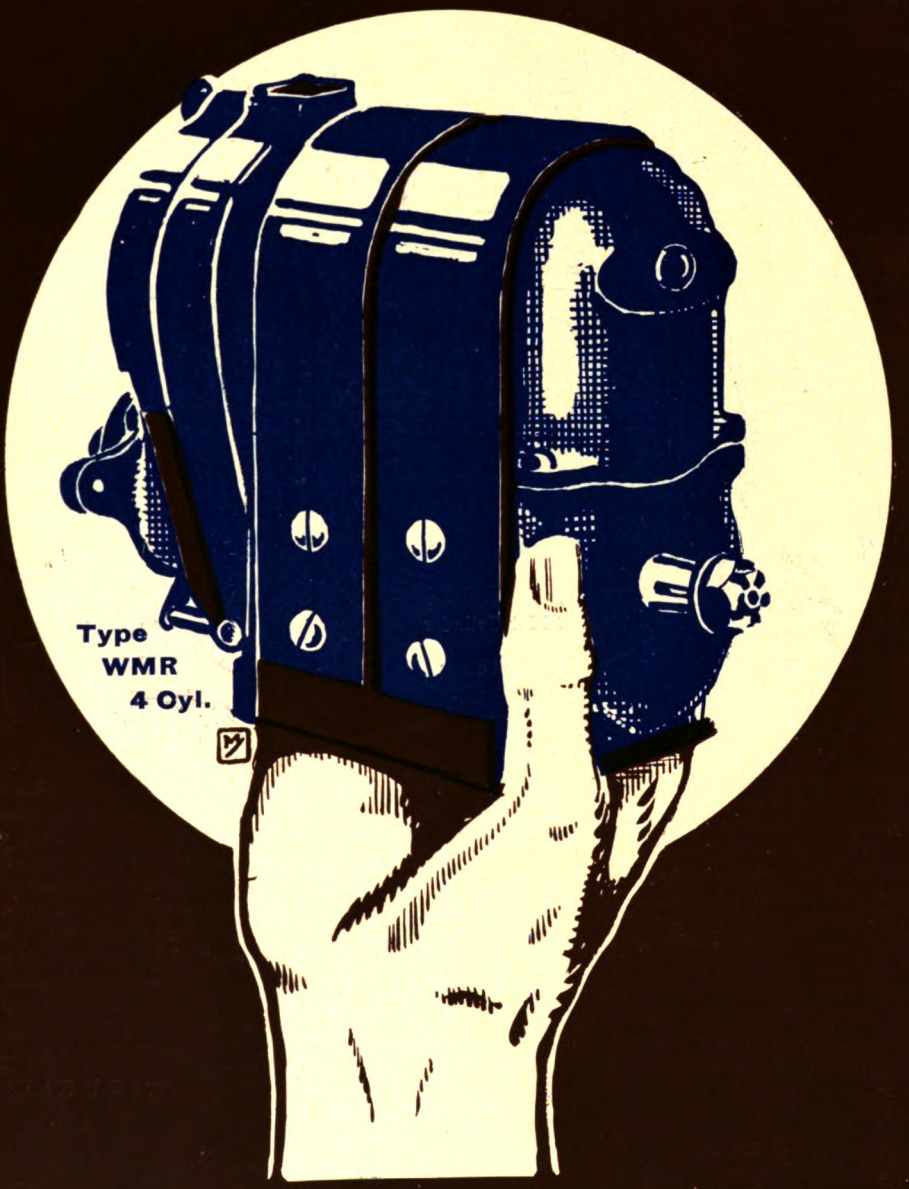
Lippard-Stewart trucks are furnished in two capacities: 1½ ton chassis, worm-drive, $2300; 1500 lb. chassis bevel-drive (pneumatic tires), $1650, worm-drive (solid tires)—$100 extra. Bodies for various purposes. Write for literature.

Lippard-Stewart Motor Car Co.

1734 Elmwood Avenue, Buffalo, N. Y.

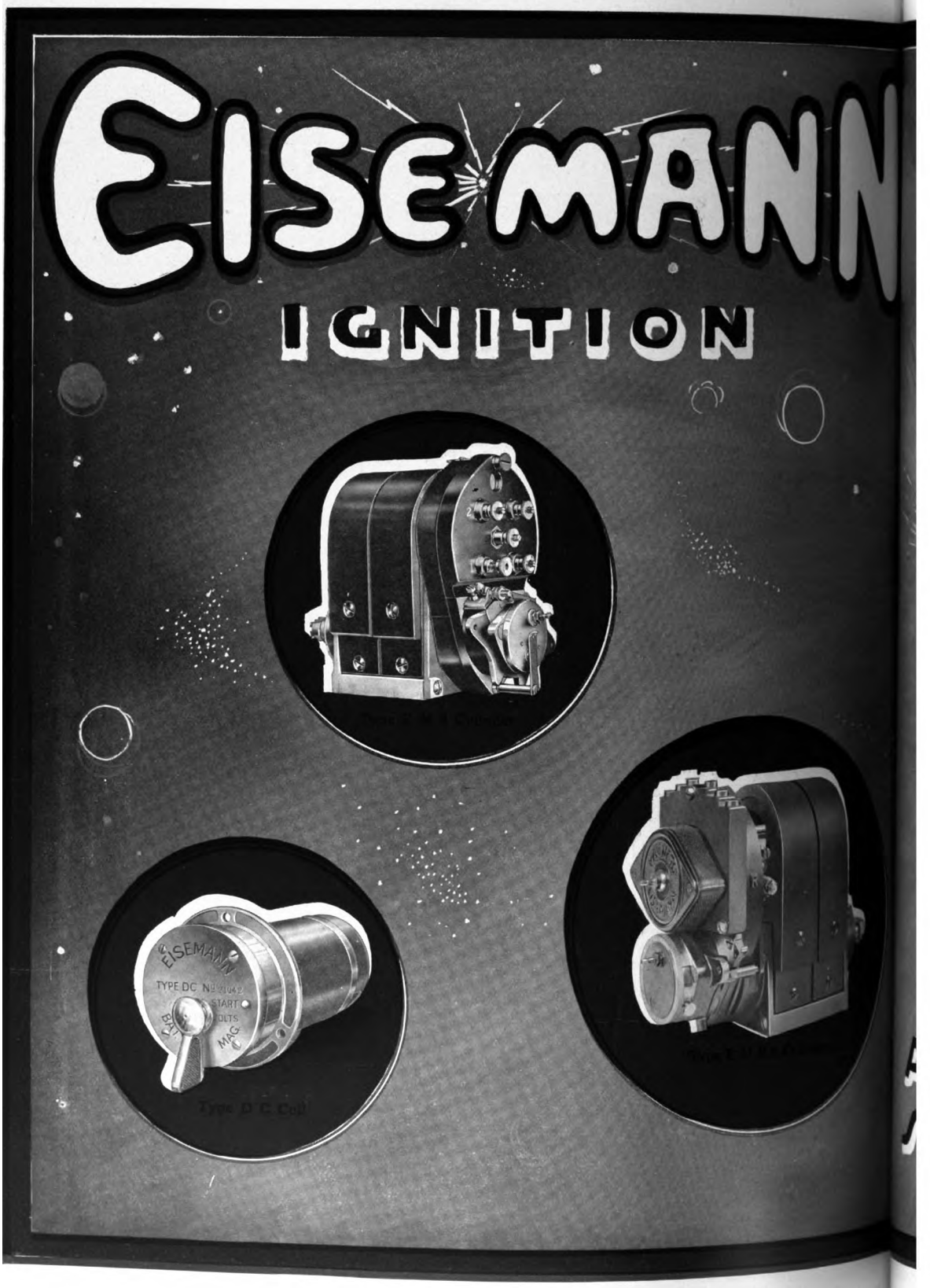
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EISEMANN



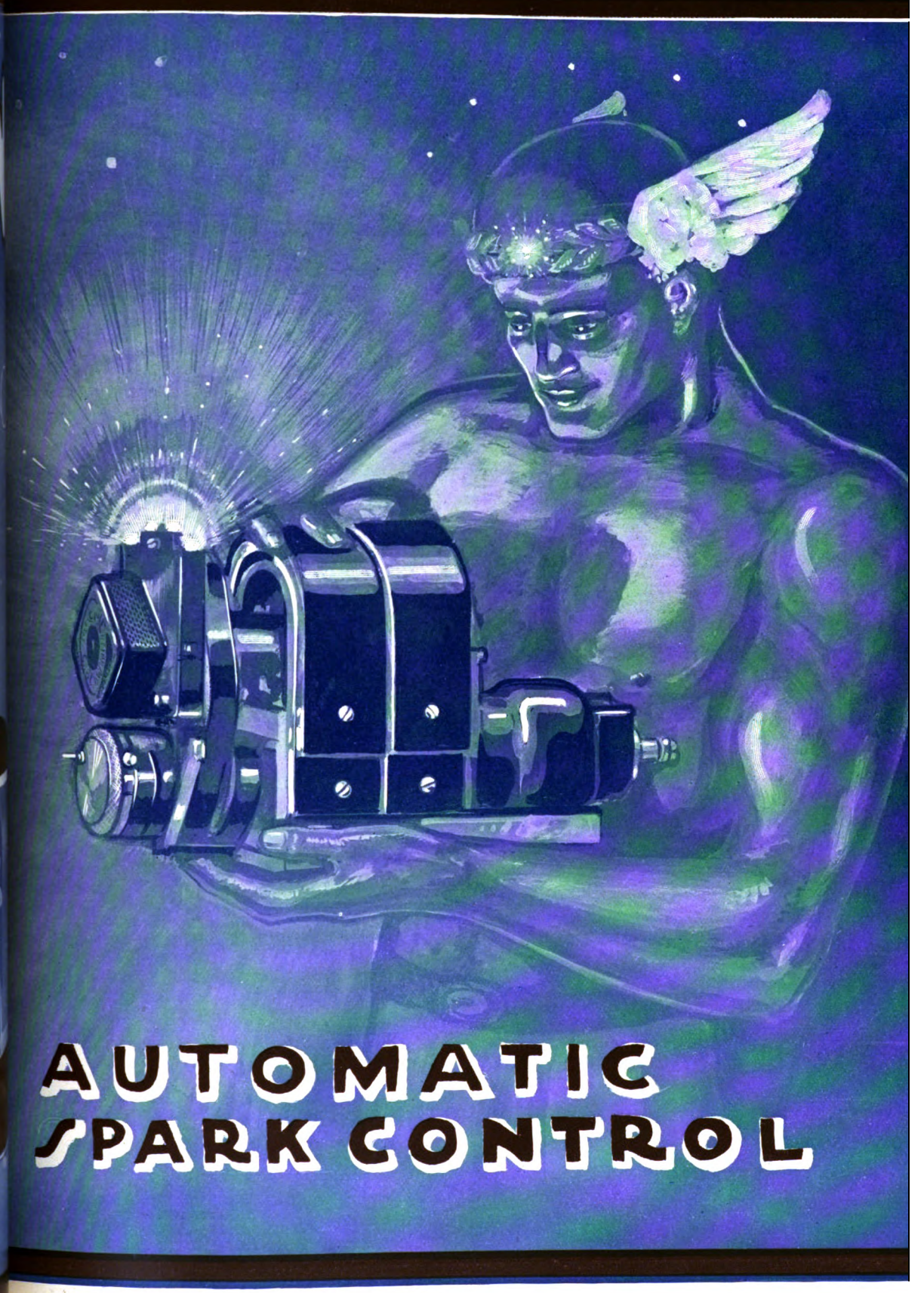
IGNITION

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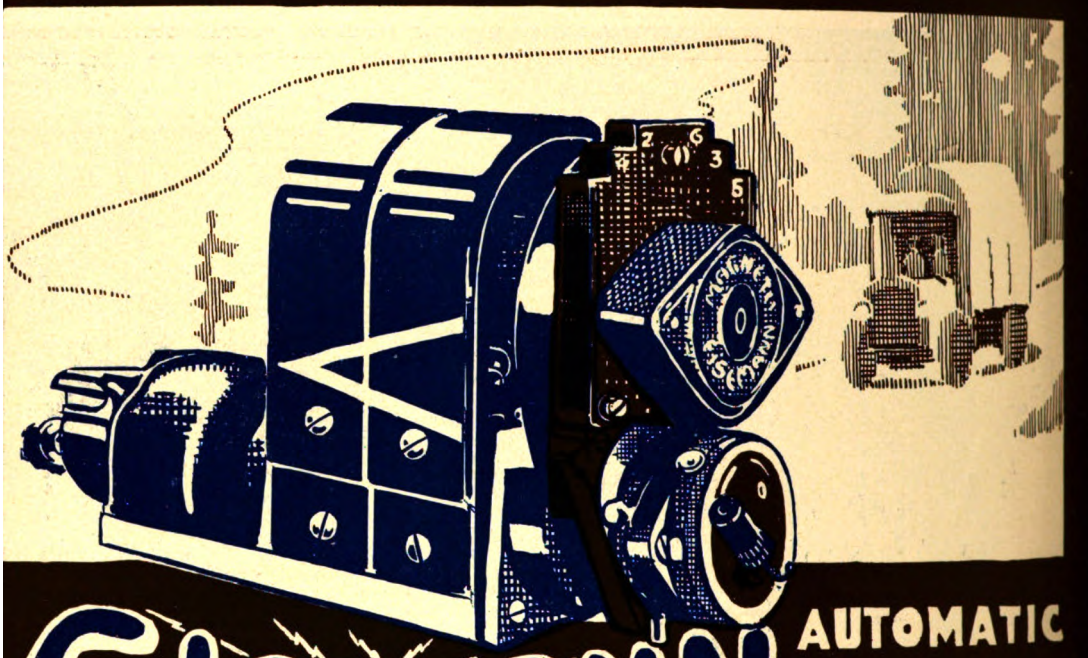


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EISEMANN AUTOMATIC SPARK CONTROL

Eisemann products will not be exhibited at any of the shows this year. When you are in New York, however, we will be glad to have you communicate with us, for our entire staff will be on hand and will take great pleasure in showing you through the factory or in serving you in any other way possible.

Since moving our general offices from New York City to the plant in the Bush Terminal, Brooklyn, the Eisemann Company has established a new service station in New York City at 123 West 52nd St., in charge of Mr. James Rohde.

The season just closed has been a remarkable one for the Eisemann Company both from a standpoint of business done and general progress and development in the advancements of Eisemann Ignition products and their manufacture. Today Eisemann Magnetos are used as factory equipment on more than seventy-three cars and trucks—with a certain increase of these figures in sight.

The wonderful performance of the Eisemann Magnetos on the Indianapolis to the Pacific Tour—in which eleven out of nineteen cars were Eisemann equipped, all of which came through with a perfect score—has not been underestimated by the manufacturers and dealers of the country. This crowning achievement has done much to increase the popularity of Eisemann Ignition. In this connection it is interesting to note that 45% of all the cars shown at the Olympia Show in London were Eisemann equipped with all the other magneto manufacturers dividing up the remaining 55%.

Remember that Eisemann Ignition is synonymous with efficiency, durability and dependability.

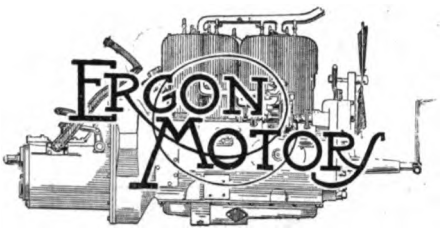
THE EISEMANN MAGNETO CO.

Sales and General Offices: Bush Terminal, Brooklyn

Indianapolis, Ind.
514 N. Capitol Avenue

Detroit, Mich.
802 Woodward Avenue

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THREE Ergon Motors have become standardized. Standardization comes with the proven efficiency of a unit. It is not a motor manufacturer's term but a term applied by automobile and truck manufacturers to parts or assemblies which measure up to the standard of their requirements.

¶ The Ergon Standard Motors are—

Model C, 3 3-4 x 4 1-2
Model CX, 4 x 4 1-2

Four-cylinder, four-cycle, L-head, water-cooled, unit plant type; four-speed selective transmission with multiple disc clutch in oil, allowing for installation of standard electric starting-lighting system in crank case. Force feed and splash oiling system. All valves enclosed. F. & S. ball bearings. Driggs-Seabury crankshafts and connecting rods.

Model D, 4 3-8 x 6

Supplied either as independent sub-frame motor or in unit plant type with Brown-Lipe dry plate clutch. Otherwise similar to Models C and CX, except Renold silent chain replaces timing gears in driving pump, magneto and valve actuating mechanism.

¶ The standardization of Ergon motors does not mean that the time has arrived to stop further development and progression in favor of a larger production. In our case it means that Ergon motors are making a mark in the industry for efficiency and economy.

¶ Not alone from the engineering side of the question have Ergon motors given satisfaction—but the business end of our activities merit the approval of car and truck builders in such situations as

Rigid Adherence to Delivery Specifications
Prompt and Efficient Service
Intelligent Co-operation In Every Detail

¶ Recently we extended our facilities and equipment so we can take care of increasing business. Our service and our motors are adequate to meet your limits, however close. Correspondence with pleasure car and truck manufacturers solicited.

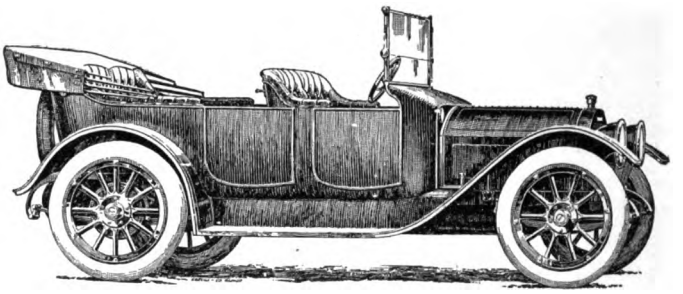
Hazard Motor Manufacturing Company

Rochester, New York

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Velie

America Follows Europe Returns to "Fours"



This Velie Four Will Displace Any Six

(At a Much Lower Cost for Maintenance)

ALREADY the average owner is tired of the excessive fuel and tire cost of the heavy "Six," and Europe, the Dictator of Automobile practice, has come back to the economical "Four." There only the light "Six" survives—the new highly developed "Four" is supreme. In this country the type of car now supreme in Europe (the Velie 4-45) leads the way. Advance orders for this remarkable car are 300 per cent. greater than last year—in the face of the tremendous shout for "Sixes" made by so many manufacturers.

THE THREE GREAT VELIE MODELS

Model 10. (The Light) Velie Six. Cylinders cast in triplets, bore 3¾ inches, stroke 5¼ inches, wheelbase 126 inches. Tires 37 x 4½ inches front and rear. Transmission, four speeds forward and one reverse. Selective sliding. Lubrication, constant level circulating system. Built as 5-passenger touring car, 4-passenger torpedo, 2-passenger roadster. Price..... **$2,350**

Model 9. The famous Velie "4-45." Cylinders cast in pairs, bore 4⅝ inches, stroke 5¼ inches. Wheelbase 121 inches. Tires 36 x 4 inches front and rear. Transmission, four speeds forward and one reverse. Selective sliding. Lubrication, constant level circulating system. Built as a 5-passenger touring car, 4-passenger torpedo, 2-passenger roadster. Price..... **$2,000**

Model 5. "4-35." Cylinders cast en bloc, bore 4 inches, stroke 5½ inches. Wheelbase 113 inches. Tires 34 x 4 inches front and rear. Transmission, three speeds forward and one reverse. Lubrication, constant level circulating system. Built as a 5-passenger touring. Price **$1,500**

THIS REMARKABLE EQUIPMENT STANDARD ON ALL VELIE MODELS

Gray & Davis Electric Starter.
Gray & Davis Electric Lighting.
Goodyear No-Rim-Cut Tires.
Demountable Rims, with extra rim carried at the rear.
Concealed Electric Horn.
Bosch Magneto Dual Ignition.
Stromberg High-Efficiency Carburetor.
Mohair Top and Ventilating Rain Vision Windshield.
Left Steer with Center Control.
Extra Long Springs, 2½ inches wide.
Deep upholstery with best leather used throughout.
Warner Auto-Meter.

Every Velie Dealer
is backed up by our great financial and manufacturing responsibility and his word is the voice of the Velie Motor Vehicle Company.

VELIE MOTOR VEHICLE COMPANY, 1002 Velie Place, Moline, Ill.

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Velie

Which Truck Is Best of the Famous Big Four?

MERCHANTS who have bought dozens of trucks now narrow their orders down to four great makes of rival motor trucks, each backed by millions of resources. All four of these makers are in the business to stay. Among them competition is keen.

The aggregate resources of these four competing makers is over $25,000,000. Each of these great organizations stands squarely back of every truck it builds and makes good its guarantees to the letter, giving service that cannot be secured from smaller concerns.

Almost daily keenly competitive tests between these four great makes of trucks are establishing which is the best. For the four are in use by the largest corporations who use trucks by the dozen.

In pulling power the Velie Truck, the only one of the big four unadvertised until now, is proving that a more powerful, slower running motor will in competitive tests out-pull and out-wear all high-speed, quick-wear, small-powered motors.

For this reason the Velie One-Ton Truck carries a motor 25% more powerful, possibly, than any other truck made. But this extra horsepower means a much greater service ratio, more miles per gallon of gasoline.

In Frame Construction all four makes have 5 or 6-inch frames—some channel shaped, others I-beam. But the Velie in addition to having a 6-inch I-beam frame has a 4-inch sub-frame that is not found on any other truck. And in heavy hauling this extra sub-frame proves its wonderful worth.

Experienced buyers can tell by comparison of specifications why it is that the Velie is winning the fiercely competitive tests between the four best makes of trucks.

Any Velie agent has these truck contest results on file—they are convincing—ask to see them.



VELIE MOTOR VEHICLE COMPANY, 1002 Velie Place, Moline, Ill.

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"32"
Roadster
$1147

Paterson

"33"
Touring Car
$1197

A line that needs no introduction
Forty-five years stability back of it

THE two important factors for you to consider, Mr. Dealer, when signing up your 1914 contract are STABILITY and VALUE.

The factor of STABILITY is becoming more and more a fixed and vital element in the sale of cars. The public wants to know who and what is back of the car. The right answer is important to them; it is important to you.

The dealers who sell the Paterson can point to an unblemished factory record of forty-five years' success.

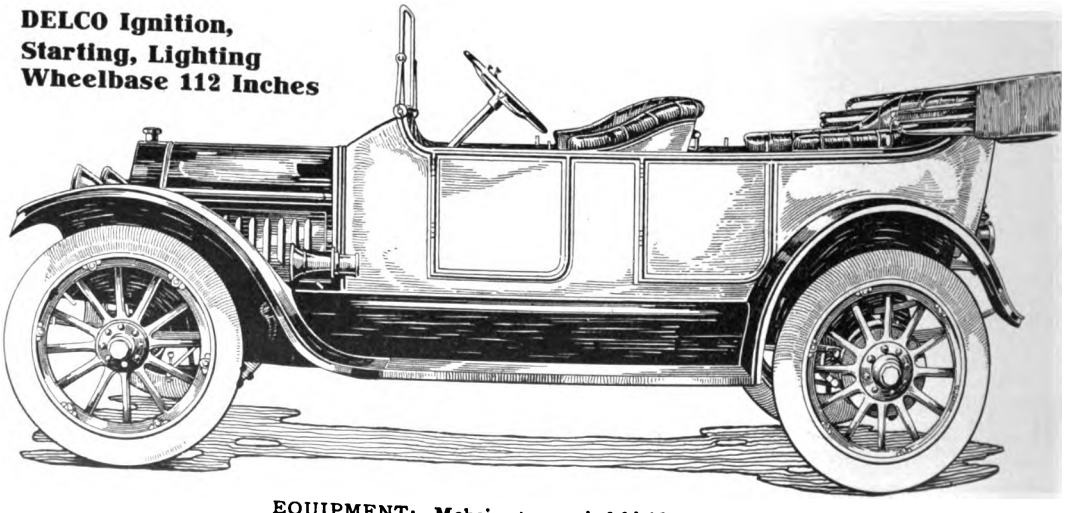
The factor of VALUE is just as vital. The public is continually asking, "Is the car really worth the money? How does it stand up in a dollar for dollar comparison with other standard cars?"

The dealers who sell the Paterson have only to point to Paterson specifications—Northway motor, Weston-Mott axles, Jacox steering gear, Delco electric lighting and starting system and other salient features—and then let the car talk for itself. There are no better materials used in any car under $2000.00—and the Paterson five passenger touring car is priced at only $1197.00! The roadster at $1147.00!

Here is a car that will stand up under any test; that will meet any questions. It is built to meet popular demand for real value. It nearly sells itself. We want a few more responsible dealers. If you can meet requirements, you can assure yourself a big year by getting in touch with Paterson. Delay means loss. Better write or wire at once.

W. A. PATERSON COMPANY, Flint, Michigan

DELCO Ignition,
Starting, Lighting
Wheelbase 112 Inches



EQUIPMENT: Mohair top, windshield, speedometer, electric horn, interior dash lights, extra demountable rim, tool kit, jack, pump, tire repair kit, etc.....

$1197

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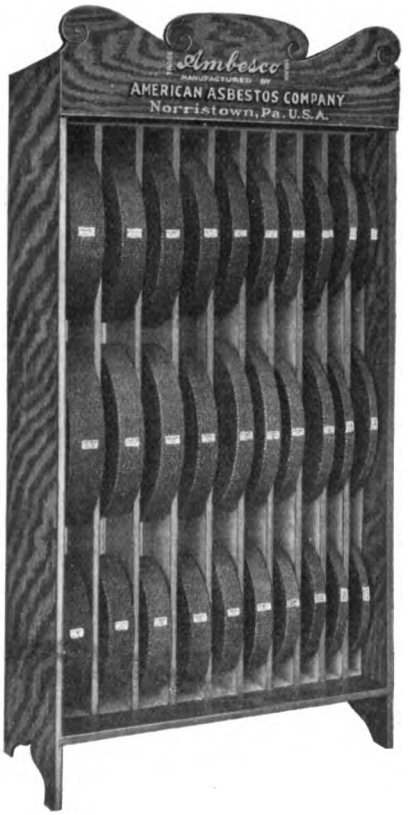


HAVE YOU INVESTIGATED OUR SPECIAL DEALERS' PROPOSITION YET?

IF you haven't closed up with us for the sale of Ambesco on our special cooperative proposition, you are overlooking one of the best opportunities, from a dealer's standpoint, that has ever been offered to automobile dealers and jobbers. In considering this proposition, remember that we do not ask you to tie up a lot of money and still we offer you the opportunity of carrying a full and complete line of this superior brake lining. And after you have stocked with this line, neither do we ask you to shoulder the full responsibility of selling the goods. By our special plan we cooperate with you both in helping you carry the stock as well as in the sale thereof.

We cannot go into full details in an advertisement, but we certainly will show you either by mail or by a personal call a most interesting as well as a most remunerative proposition if you will apply to us for full details.

We are illustrating again the new Ambesco Brake Lining rack, which contains a full stock of every size of brake lining made. By carrying your brake lining in this shape not only are you showing your customers a full line which contains all the odd sizes as well as the standard sizes, but you are displaying your wares in an attractive manner as well as in a manner which



enables you to save space and handle the goods in the quickest and easiest way from your standpoint.

All Ambesco is now easily identified both by the trade mark and by the fact that the edges are all gilded. We have applied this gilt to the edges to give our product immediate identity and thus protect you and your customers from substitution of inferior products which look similar from the outside but which are far inferior to the real Ambesco.

Not only are we offering you the opportunity herewith of handling a full line of brake lining on an easy cooperative basis, but we are offering you the opportunity of handling the acknowledged superior of all brake linings—a most staple commodity.

There is an enormous amount of brake lining business in your territory and this plan will enable you to corner a large proportion of the brake linings sold in that territory.

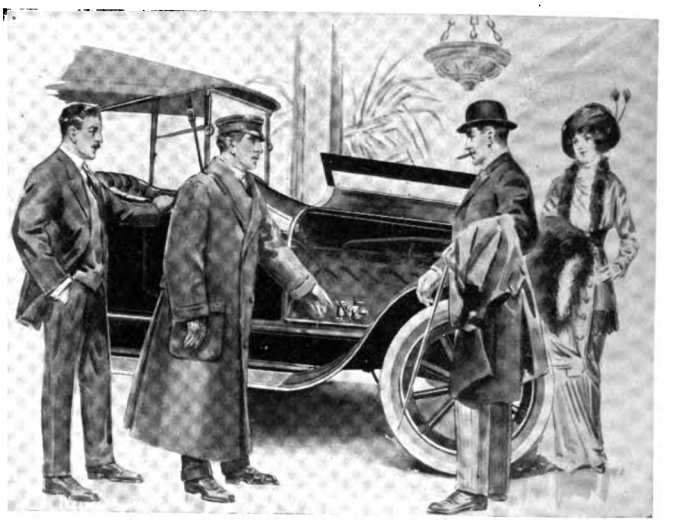
Ambesco is manufactured by us from the raw stock to the finished product and we know that its quality is not only superior but absolutely uniform in every way.

Doesn't this sound interesting? Write us—the details will interest you to a far greater degree.

AMERICAN ASBESTOS COMPANY, Norristown, Pa.

Dealers and Manufacturers both---remember we are manufacturers also of Asbestos Friction Discs for Multiple Disc Clutches---also Asbestos Clutch Facing for Cone Clutches

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"The Rayfield is the Point of Difference"

The presence or absence of the Rayfield Carburetor is sufficient reason for choosing or discarding a motor car.

That is, unless you care to go to the added expense of installing a Rayfield after you have bought your car.

A motor car may be a good car and still not have a Rayfield Carburetor; but it would be a ***better*** car if it did show the Rayfield.

A motor car may stand high in every other specification; but if it lacks a Rayfield Carburetor it is still lacking in quality.

RAYFIELD CARBURETOR

If you should choose a car that provides only a poor or ordinary carburetor, you can expect only poor or ordinary service in return.

For the carburetor is the point of difference between the "best" and the "not-so-good."

The Rayfield Carburetor is the final stamp of merit just as any less efficient carburetor is a confession of weakness.

And isn't this reasonable?

Supposing for instance that you see in an automobile the very latest developments in motors, the highest grade of clutch and transmission; the best self starter; and in fact every other specification that stands for motor car supremacy—

Supposing you lift the hood of such a car and note the absence of the Rayfield Carburetor, what are you to think?

You know, the same as thousands of others know, that the Rayfield is the one carburetor that has stood for all that is best in motor car practice.

What are you to think, then when you notice the absence of the Rayfield on the car you thought was "best."

There is only one answer. If motor car service is dependent upon perfect carburetion; and the car before you lacks the test-proven Rayfield; then regardless of the quality it may show in other parts, you cannot expect to receive 100 per cent. service.

And do you think it right for the manufacturer to handicap his car with a second rate foundation?

If the very basis of his motor car is skimped, how can he expect you to obtain the highest efficiency from it?

There is a lot to this carburetor business. It is no small task to lay the corner stone for the perfect running of your automobile.

But Rayfield experience is thorough; Rayfield improvements are well grounded; the Rayfield Carburetor embodies correctness of design and operation that is not duplicated.

For power; speed; economy; and efficiency the Rayfield Carburetor is a synonym.

As a basis upon which to build motor car service, it has no equal.

Look for the Rayfield Service Station in your city

That's why the Rayfield is the point of difference.
The short step between the best and the "not-so-good."

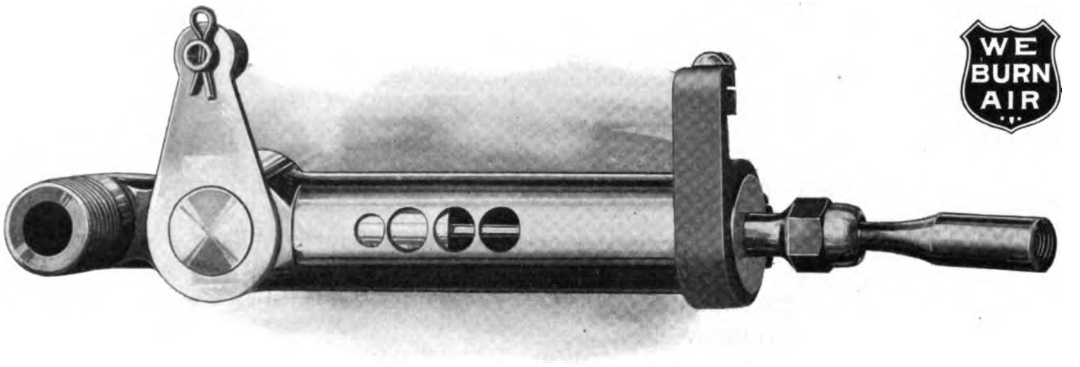
FINDEISEN & KROPF MFG. COMPANY

2102 Rockwell Street, Chicago, Ill.

BRANCHES:—1140 Michigan Ave., Chicago; 1211 Woodward Ave., Detroit; 1902 Broadway, New York

If you are going to be at the Chicago Show make the Chicago branch of the Rayfield Company your headquarters and have your mail addressed care of us.

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THE Empire Gasoline Economizer is not a fad; it is a scientific aid to better motor car service.

It is not a "knick-nack" to buy because you are an automobile enthusiast; it is a vital help to better efficiency.

The Economizer is built on as scientific a basis as is the carburetor; its work is just as important.

Air is mixed with gasoline to form the vapor which when exploded propels your motor car.

Air is just as necessary to the explosion as is the gas.

You can not explode liquid gasoline with a spark; it will only flame and there is no power in flame.

Because no carburetor has ever been made that controls the air at all speeds of your car, it is plain to see that somewhere the explosion approaches the "flame" point.

The carburetor is adjusted to certain speeds, weather, grade of gasoline, traffic conditions, etc.

There is no limit to the varying conditions that arise in just one mile of driving; and each variation calls for a different gasoline mixture.

Your carburetor is a "mixing pot" and is not intended as a "regulator" of the mixture.

The Empire Gasoline Economizer is an automatic regulator of the gas and air mixture; it acts **with** the throttle; meeting every condition to insure perfect combustion and the greatest power from the charge—

See what that means!

It means that instead of increasing speed or power with added gasoline; it meets the additional task with added gasoline **and air.**

It controls the mixture; it holds back the rich gasoline vapor and mixes with that vapor additional air; to take care of the increased speed or power demand.

In other words it burns air! Absolutely. Here's what you gain.

You get every possible bit of energy from each ounce of gasoline.

The cylinder walls and plugs are kept free from carbon caused by the smoke of too rich a mixture.

You get a hot spark at all times because of clean plugs.

You keep your engine cool—it's flame that heats an engine—and there is no flame.

You get more miles to the gallon of gasoline.

You save money—you get a higher efficiency from your car.

It costs $10.00.

Suppose you use 5 gallons of gasoline a day at 17 cents—that is $5.95 per week.

The Economizer will save you from 20% to 80%.

It will pay for itself in two weeks; in cash —and in ten miles; in satisfaction.

Write at once for our booklet on Motor Car Economy.

We've prepared it for the show, but we will send you an advance copy.

Sold on a Satisfaction Guarantee. Money back if it does not "make good"

BROWN-TAYLOR-GREENE COMPANY

1323-25 South Michigan Avenue, Chicago, Ill.

We are closing with responsible agents for state rights

See Empire Economizer in the "Vesta" Exhibit at the New York Show.

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An opportunity to swim with the tide of enthusiasm

AJAX tires are best for the dealer to sell just as they are best for the car owner to buy. Ajax tires are Guaranteed in writing for 5,000 miles. The Ajax guarantee has been made for upwards of nine years, and is the strongest influence possible to exert upon tire buyers! The effect of the Ajax guarantee multiplies in each year.

AJAX TIRES
Guaranteed
(in writing)
5,000 Miles

The Ajax tire business is a success. From the very first Ajax dealers have shared in the company's success.

The Ajax business is bigger this year than last and greater last year than the year before. Ajax is still climbing upward. It hasn't begun to slide down the other side. The Ajax opportunity is a live one!

When the dealer joins the Ajax family he *belongs*. He deals with headquarters. The men who own the Ajax business work for it.

The Ajax product is increased for the new year. We are seeking some new dealers to add to our list. We want some few strong men to come into the Ajax fold, to participate in our further success.

Remember that we have never yet built enough tires to supply the Ajax demand and the product has been increased in each year. We know from the success of our dealers that the Ajax line is the biggest opportunity, the most valuable dealership and the most important connection possible to make in the whole accessory field.

Ajax dealers have all the protection that their efforts entitle. Protection of the dealer is not only our policy; it's our principle, and principle is something else, again.

Don't delay! Act upon your present strong impulse! *Write us today.* Our district traveler may be in your vicinity. You will want to meet him and know the details of the Ajax proposition. Wire or write NOW!

"While others are claiming Quality we are guaranteeing it"

AJAX-GRIEB RUBBER COMPANY

1796 Broadway **New York**

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A·R·MOSLER & Co.'s SPARK PLUG PATENT SUSTAINED

WARNING

The United States Circuit Court of Appeals Upholds Our Canfield Basic Patent

This decision covers both the petticoat and the conical type spark plugs having a recess deeper than its diameter around the electrode; which feature is found in all the best-known spark plugs now on the market.

Every party who manufactures such spark plugs without being licensed to do so under this Canfield patent and every party who sells or uses such spark plugs not manufactured by us or by any party licensed to sell them under this Canfield patent will infringe this Canfield patent and be liable to a suit in equity for damages and an injunction.

Since the Circuit Court of Appeals confirmed the validity of this patent, we have given a great deal of thought and consideration to the future spark plug business, as our ownership of this patent may affect it.

The keynote of our policy with respect to the manufacturers and dealers in spark plugs, was fully described in a previous issue of this paper.

It gives us pleasure to state that the following leading manufacturers of spark plugs have been licensed by us under this Canfield Patent:

Auburn Ignition Co., Auburn, N. Y.
Benford Mfg. Co., Mt. Vernon, N. Y.
Belvidere Screw & Mch. Co., Belvidere, Ill.
Champion Ignition Co., Flint, Mich.
Champion Spark Plug Co., Toledo, O.
Frontier Specialty Co., Buffalo, N. Y.
Emil Grossman, Inc., Brooklyn, N. Y.
Hartford Mch. Screw Co., Hartford, Conn.
Jeffery-Dewitt Co., Detroit, Mich.
Lockwood-Ash Motor Co., Jackson, Mich.
C. A. Mezger, Inc., N. Y. C.
N. Y. Mica & Mfg. Co., Auburn, N. Y.
Oakes & Dow, Boston, Mass.
Rajah Auto Supply Co., Bloomfield, N. J.
Reflex Ignition Co., Cleveland, O.
Sharp Spark Plug Co., Cleveland, O.
Silvex Co., N. Y. C.
V-Ray Co., Marshalltown, Ia.
E. Q. Williams, Syracuse, N. Y.

A. R. MOSLER & CO.

A. R. MOSLER, President

December 16, 1913

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Mosler Spit Fire Plugs

A Special Message to the Trade

We have, upon various occasions, outlined our policy with regard to spark plug manufacturers in so far as our ownership of the Canfield Patent affects them. It is broad and liberal, in no way prohibitive. Even those manufacturers who did not believe in the validity of the Canfield Patent and who refused to recognize our rights under it until the decision of the Court of Appeals left no doubt as to its validity, are licensed. As owners of this patent, we have not assumed any advantage to aid us in merchandizing our plugs.

The market is just as free as ever for fair competition. As in the past we are relying upon the merit of Mosler Spark Plugs to retain our share of the business. We are relying upon our resources and manufacturing facilities to enable us to compete with other licensed manufacturers in the making and selling of our plugs.

Our purchase of the Canfield Patent was not an accident. It was just as much a logical business move as any development we have made in bringing out our various types of plugs, the Spit-Fire, Vesuvius, Triumph, Mosler Junior, Mosler Priming Plug, etc., and developing them to their present high degree of perfection. It is typical of the thought and energy we apply to every department of our business.

Back as far as 1900, some six years before the magneto came into general use, Mosler's Spit-Fire Spark Plugs with the closed end and recessed porcelains had set practically the world's standard for spark plugs which would not foul and short circuit because of carbon deposits on the electrodes.

At the time the magneto took its place in the scheme of automobile ignition, Mosler Plugs again set the standard for plugs which would stand up under the extremely hot spark generated by the magneto.

The magneto had a far reaching effect upon the materials as well as design of spark plugs and in line with other activities we brought out a Mosler Spit-Fire Plug with a genuine platinum point, the design of which has stood the test of use under all conditions for years — necessitating practically no changes and no improvements. True to its design the Spit-Fire with the Platinum Point soon took a leading place among others and its merit soon created such a steady demand that some unscrupulous distributors substituted the original Spit-Fire battery type plugs for the genuine Platinum Pointed Plugs. This began to reflect upon us as manufacturers because, not being built to stand up under the magneto's hot spark, the original Spit-Fires did not

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Mosler Spit Fire Plugs

give the same satisfaction people had been accustomed to get with Mosler Plugs. In order to protect ourselves, our dealers and the people who bought the plugs, we put a RED TAG GUARANTEE ON EVERY GENUINE PLATINUM POINTED SPIT-FIRE AND CAUTIONED THE TRADE AND THE PUBLIC AGAINST SUBSTITUTIONS.

Not only to business details have we applied our energies and thought, but the development of our products will show that we had a keen insight into the ignition problems of every type of internal combustion engine and that instead of waiting for others to develop plugs for each particular purpose, we brought out many of the more important ideas that have become standard with the majority of spark plug makers. We are now, and have been for years, making plugs adapted for use on pleasure cars, trucks, motor boats, motorcycles, etc. For the past three years we have published a booklet listing nearly every kind of motor and showing the type plug designed for use on such motors.

It is not surprising that in consequence of all the energy and expense we have devoted to the development of spark plugs that our plant has had to keep pace with an enormously growing demand.

From the original output of 3,000 Spit-Fire Plugs in 1900 the annual output of our Mount Vernon Factory has grown to millions of plugs annually. The production of this number of spark plugs has necessitated an enormous expense in machines and facilities. Many of the machines in our factory are special as well as automatic, built according to our own design to meet the requirements of our business. The methods of inspection are second to none in any factory. The object is to detect any imperfection almost as soon as it occurs and to prevent, in so far as it is humanly possible, a faulty plug getting on the market.

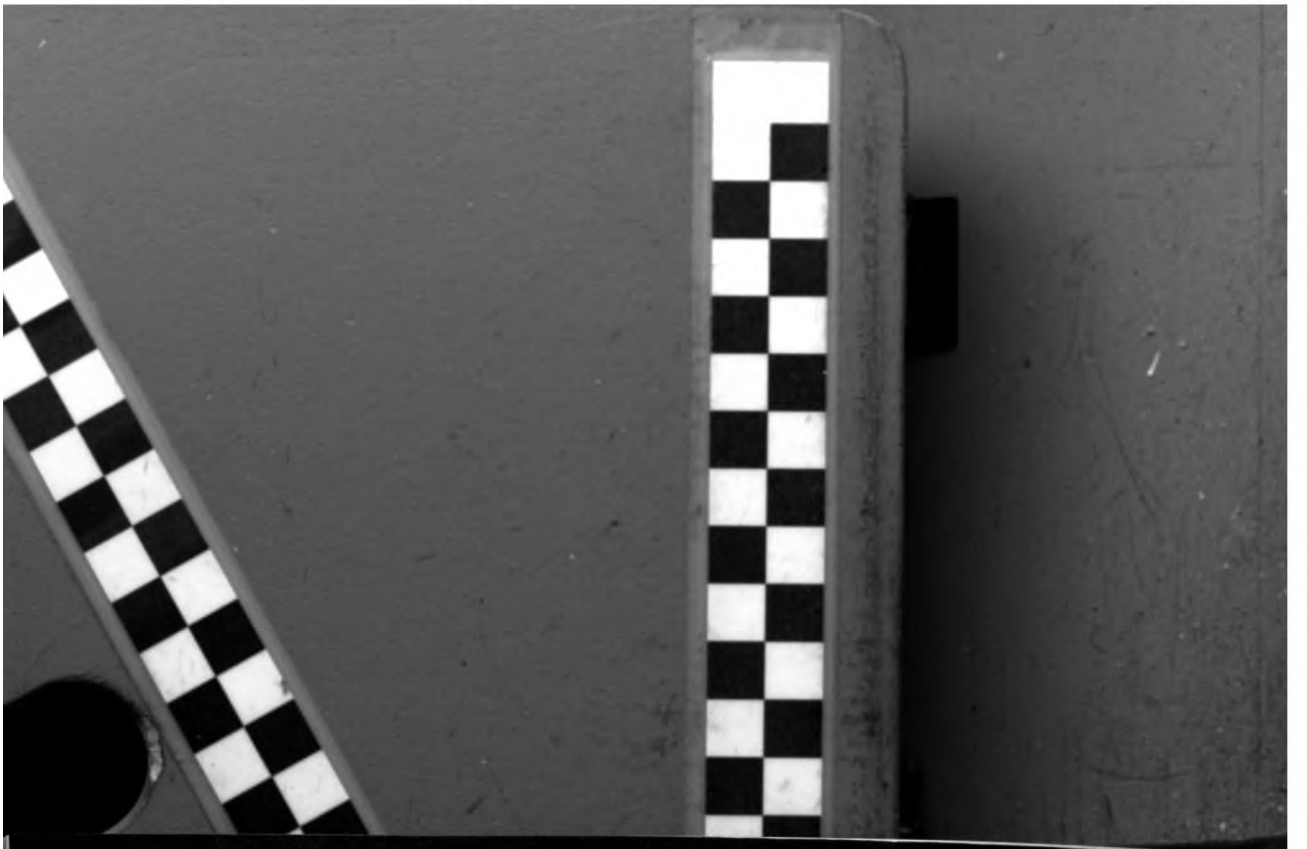
So it is small wonder that when we learned of the Canfield Patent which covered the most vital point of Spark Plug Design, we bought it. It seemed necessary to the undisturbed enjoyment of our work, although for years previous little was thought of this patent and it had changed hands many times without any of its owners regarding it as vital or even valuable. Even this precaution illustrates the thought that is characteristic of every detail of our business. It means that we know what we are doing, that a life-long study of ignition requirements, both from a merchandizing and manufacturing standpoint enables us to understand and to fill the demand for perfection. So confident are we of the intrinsic merit of Mosler Product, Spit-Fire and Vesuvius Spark Plugs, so confident are we of our manufacturing facilities, so confident are we that the Trade as well as the users of Spark Plugs will sooner or later recognize the superiority of our products, that we are taking a broad, fair view of the market, content to abide by whatever the merit of our plugs brings us, without using, in any inequitable manner, any advantage we might exercise by reason of our ownership of this now famous Patent covering the most vital point of spark plug design and construction.

A. R. MOSLER & CO.

Sole Owners of the Canfield Patent

December 16th, 1913

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Mosler Spit Fire PRIMING Plug

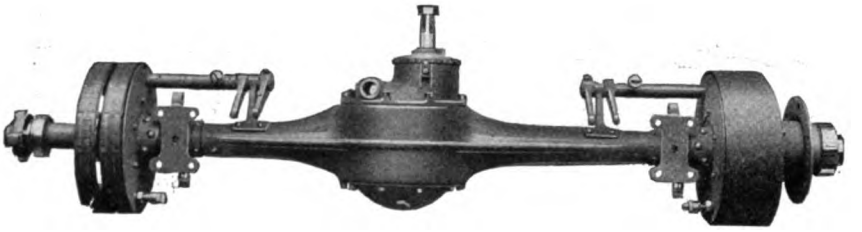
Ford

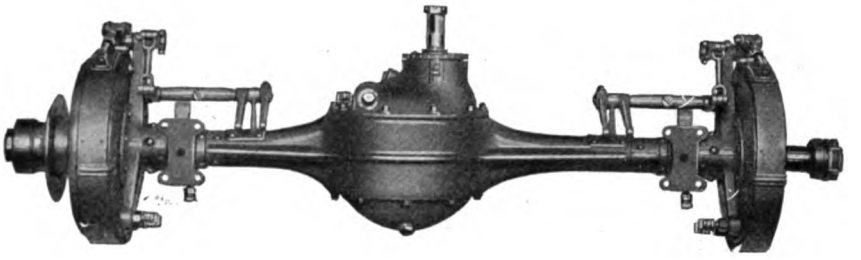
AND ALL OWNERS
READ THIS

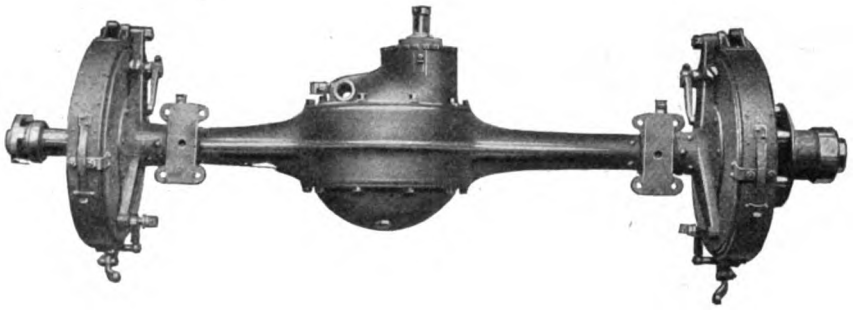
Not a copy.
Original in design.
Not a makeshift.
Made an integral part of the plug
No valves to leak.



"American" Axles







Bevel Drive Type

"American" Full Floating Rear Axles are made in three sizes, in order that cars of the highest class may have axles of corresponding quality, correctly proportioned.

There is, of course, no variation in either workmanship or material; each represents maximum efficiency. Their equal—for either gasoline or electric cars of the finest type—is yet to be made.

The adjusting and full floating features of "American" Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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THE B. & W. FORD REAR HOUSING PULLER

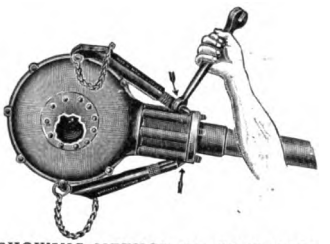


It is a tool that the Ford repairman has been looking for ever since the Ford automobile was put on the market.

It is a tool that will remove the Propellor Shaft Housing from the Differential Housing without damaging the Flanges.

In the past it has been necessary to drive the housing off with a hammer, which damaged same.

There are two B. & W. Pullers in a set, and are used same as shown in cut.

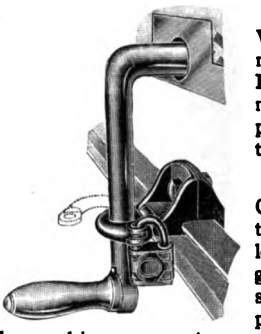


SHOWING METHOD OF OPERATION

Price Per Set
$6.00

Universal Manufacturing Co.
Racine, Wisconsin

THE B. & W. CRANK LOCK



Investigate the B. & W. before your customer's car is stolen. Every motor car owner needs constant and complete protection against the thief and joy rider.

The only Positive Crank Lock manufactured that absolutely locks the crank in engagement with crank shaft, making it an impossibility to start motor by pushing car, towing or by jacking up the rear wheels.

It is a Positive Locking Device and can be attached by anyone in ten minute's time.



The B. & W. Lock is finished in black enamel and provided with a strong lock and two keys. To be attached to the front axle as shown in cut.

Price $1.50

Order from your Jobber or write us

UNIVERSAL MANUFACTURING CO.
RACINE, WIS.

PICKUP PLIERS



TWENTY-ONE INCHES LONG



WHEN FOLDED SEVEN INCHES LONG

Small enough to put in the pocket or any tool box.

A Handy Device for Automobile Use

Such as picking out Wrenches, Spark Plugs, Screw Drivers, Bolts, Nuts or anything that might drop in the Pan, Transmission Case, Gas Tank, etc. Can also be used

For Cleaning the Motor

by placing a piece of Waste in the end and dipping in gasoline, thereby reaching any part of the Motor.

This Device will save many times the price of itself in time, and will keep your coat and shirt sleeves clean.

It is made of the Best Material and Nickel Plated.

Is a Whirlwind Seller

PRICE $1.00

Manufactured by

Universal Manufacturing Co.
Racine, Wis.

FORD ENGINE STARTER—$9.00

You do not have to leave your seat to start your Ford Motor when equipped with this Starter.



All that is necessary is to pull the lever. Will absolutely turn your motor past firing compression every pull.

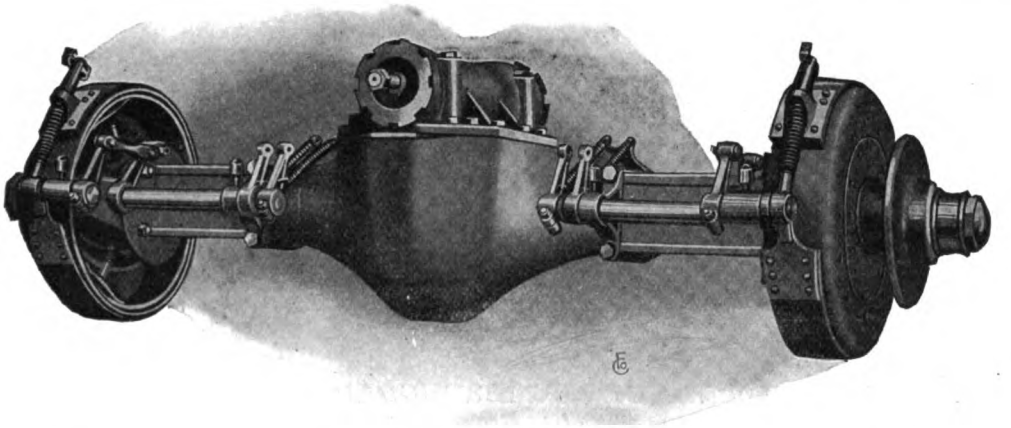
Can be easily attached by anyone in about one hour. Absolutely no mechanical work necessary to install same. **$9.00** To be had at all dealers or direct on receipt of price.

DEALERS: WRITE FOR OUR SALES PROPOSITION TODAY.
For further information, write us.

Universal Manufacturing Co., Racine, Wis.

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THE PUBLIC DEMANDS THEM—
SHELDON WORM DRIVE AXLES



A Year Ago This Sheldon Worm Gear Axle Was Described in This Publication

It was a new product and looked upon by many as an experiment. ***We emphasize*** the fact it was not an experiment, and hence we offer you the same axle today.

It is a Standardized product. We always follow progressive, but standard practice in our design, material and workmanship.

This axle sells at a higher price than other axles, but the ***quality*** is there, ***they do stand up.***

If you want to know about worm gear axles made with the correct factor of safety, write us, or read what this user says:—

"The first worm drive axle has now been on the road every day (Sundays included) for a little over five months during which time it has been run something over 5,000 miles. The fact the machine itself has been in use every day from the start is evidence enough of its reliability, and so far as the worm is concerned I do not believe the most delicate measuring instrument could detect wear. It is the same today as the day the machine was first put out."

THEY DO STAND UP

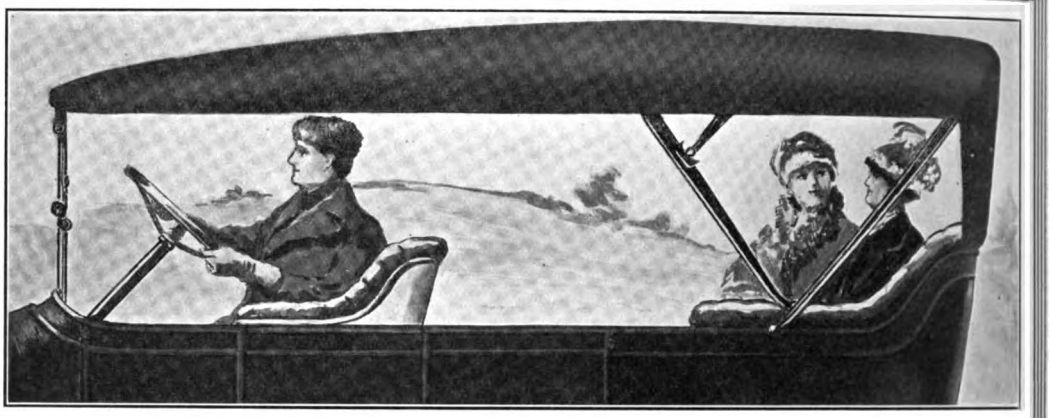
SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

CHICAGO OFFICE:
68 East 12th Street

SAN FRANCISCO:
444 Market Street

DETROIT:
1215 Woodward Avenue

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SHARRER
ONE HAND TOP

is the *only one hand* or one man *top* that can be raised or lowered either from *within or outside the car with only one hand.* There are other so called one man tops made with braces that have to be broken on both sides to lower the top and in doing so pinch the fingers and tear holes in the material. These braces get stiff and rusty so that two men are often required to lower such a top. *The Sharrer is always a one hand top under all conditions.*

To car manufacturers we offer attractive shop rights, sockets, assembled frames or complete tops.

To top makers we offer you an opportunity to keep in business on a lucrative basis. If you don't investigate the Sharrer Top and proposition—you lose. See us at the New York and Chicago Auto Shows.

We have broad patents and guarantee to protect you.

SHARRER PATENT TOP CO., Inc.

245 West 55th St., New York City



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QUALITY • QUALITY • QUALITY • QUALITY • QUALITY • QUALITY •

Now, you must decide!

The tire selling field has undergone a great change in the past 12 months.

The car owner has become disgusted with tires that demanded constant replacements and adjustments.

More than ever he is looking for real quality, real service—**real mileage.**

For a time he was satisfied with tires made to "sell."

Now he is demanding the tires made to "use."

You must decide which tire you are going to sell

Will you cater to first-time sales with "popular priced" tires—bearing yourself the expense and overhead selling cost of constantly "digging up" new customers, and losing old customers who are dissatisfied with cheaply made tires?

Or will you put your tire business on the right basis with tires made right—that deliver to the motorist the mileage he is entitled to—that always mean a satisfied user and a repeat sale that costs you nothing to make?

We have the quality kind of tire, and are looking for the right kind of dealer in a few selected territories.

If you are interested in ultimate profits as well as present sales—write or wire us at once.

THE REPUBLIC RUBBER CO.
Youngstown, Ohio

Branches and Agencies in the Principal Cities



REPUBLIC STAGGARD
TREAD TIRES
PAT. SEPT. 15-22, 1908



THE NEW REPUBLIC "W M" TREAD.

A New Tire for Small Car Owners

Here is the greatest small car, non-skid tire ever put on the market. The same quality of material and workmanship that go into Republic Staggard Treads, go into the "W M" Tire. It costs less than Republic Staggard Treads, but on Fords and cars of similar type, will give excellent mileage and service.

REPUBLIC MILEAGE

PLAIN AND STAGGARD TREAD TIRES

QUALITY • QUALITY • QUALITY • QUALITY • QUALITY • QUALITY •

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Lozier Light "Four" is Ready and It's Profit Sharing Time for Lozier Dealers

The $2100 Lozier Light "Four," the wonder car, is ready—first deliveries in January.

Take a few days off from business; forget what line of cars you handle—only remember you are in business to get dollars and not for your health—and come see the Lozier Light "Four" at the national show nearest you.

We say, "Come, see this Light 'Four'"—not "Come to see the show," because this Light "Four" **is the show.** A certain number of dealers—it can't exceed 400 or 500—are going to "cash in" this year. They will fatten their bank accounts; line their purses with real money. Fortunes come quickly in this business to the man with the acumen to size up conditions and see ahead clearly.

In the Lozier Light "Four" we have built you a great car to sell—a light weight, strong, powerful, speedy, luxurious mountain-climbing automobile—a real Lozier in every sense of the word.

We have made it a "four," for the Light "Four" is the **car best suited to the owner-driver.** Instead of extra cylinders under the hood we have added on the car a great list of new refinements including a mountain-climbing type Lozier motor; the quietest and simplest four cylinder motor ever built.

We refused to deceive your customers by adding extra cylinders simply for the sake of having extra cylinders when we knew we could give them more for their investment by spending the money in valuable time-saving refinements.

Look at it from your buyer's side of the fence; refinements such as these appeal strongly to the man who drives his own car—and most men who pay around $2000, or under, **do drive their own cars.** Refinements certainly appeal more to these men than added care and big "gas" and repair bills. **These** are what extra cylinders bring to the owner-driver who is trying to stretch a couple of thousand dollars a long way in buying a car.

Take a few days off from business and come see the Lozier Light "Four."

Special Refinements

Special mountain-climbing type Lozier motor
300 to 500 pounds saved in weight
Four speed transmission with direct drive on third speed.
Tungsten steel valves
Gun iron pistons
Chrome-silico manganese springs
Silent floating rear axle
New top—can be operated by a woman
Quick acting side curtains
One-hand operated windshield
Silent chain engine drive
Convex rounded fenders
Tire pump—motor driven
Electric headlight dimmers
Instant locking rear tire carrier
Instrument board within easy reach of driver's hand
Gray & Davis electric starting and lighting system
Cleared running boards
Original Lozier streamline body
Corrugated hard rubber steering wheel
36½ ft. turning radius
Full seven or five passenger body with disappearing extra seats
36 x 4½ inch tires

LOZIER

Light "Four" $2100

"The Choice of men who know"



LOZIER MOTOR COMPANY, Detroit, Mich.

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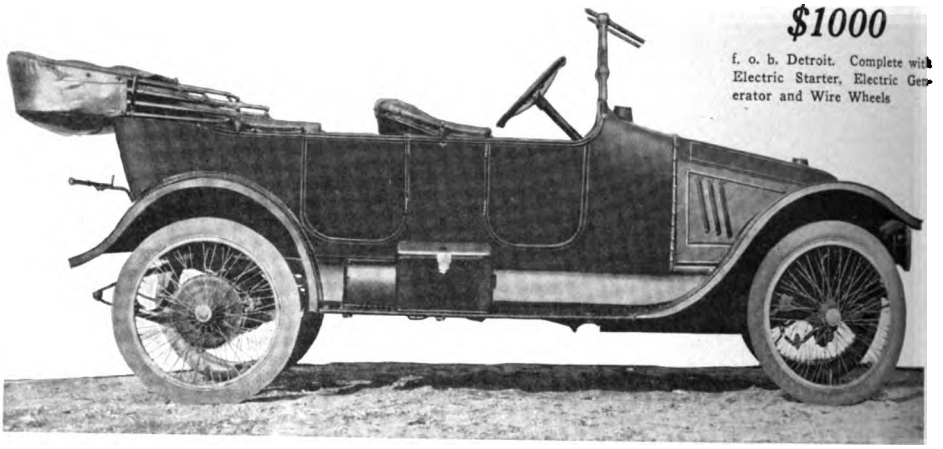
MAYO RADIATORS



EVENTS have proven that more courage and ability are required to imitate Mayo quality than to copy Mayo design. Quality is the basis on which Mayo Radiators have been built and will continue to be built.

MAYO RADIATOR COMPANY
New Haven, Connecticut

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$1000

f. o. b. Detroit. Complete with Electric Starter, Electric Generator and Wire Wheels

Five Passenger Touring Car

Monarch

Note, the Equipment Includes

- Electric Self-Starter
- Electric Generator
- Electric Horn
- Wire Wheels
- Clear vision-rain vision Windshield
- Extension Top with famous "Jiffy" Curtains
- Three Electric Lamps. Dimmers in headlights.
- Jones Speedometer
- Tools, repair kit, pump and jack
- Tire Irons
- Robe Rail
- Foot Rail

Astonishing Car Value

Here is a car that sets a new pace for value at a thousand dollars. It has all the earmarks of a distinguished foreign car. It has the lines, the style and the beauty that challenge attention.

It backs this up with mechanical features that instantly disclose sound, conservative, practical engineering practice—ripe experience.

It has the strength, the speed and the lightness that mean satisfaction and ECONOMY.

It has rare individuality; it stands out from the common herd in a manner that defies competition—makes selling easier.

It is the car that spells OPPORTUNITY for the dealer. It gives you something to show, something to talk about. It stirs enthusiasm—and it keeps it up.

It is a full five-passenger car. Body is stream-line, of course. Note how perfectly it harmonizes with the Renault-type hood.

Under that hood, by the way, is concealed a radiator. It can't be seen, yet it is easily filled from the outside.

We use a unit power plant, water cooled, cylinders cast in pairs. Three-bearing crankshaft, force-feed oiling system, multiple disc clutch, sliding gear transmission—three speed, center control, left steer, three-point suspension and a dozen other features that make a hit with the man that buys and the man that sells.

But, we are not going to talk specification here. If you are "on" you will need no leading to this opportunity. You will beat the other fellows to it and WIRE at once for full details of our proposition—and while you are at it you will ask about territory before someone else snaps it up.

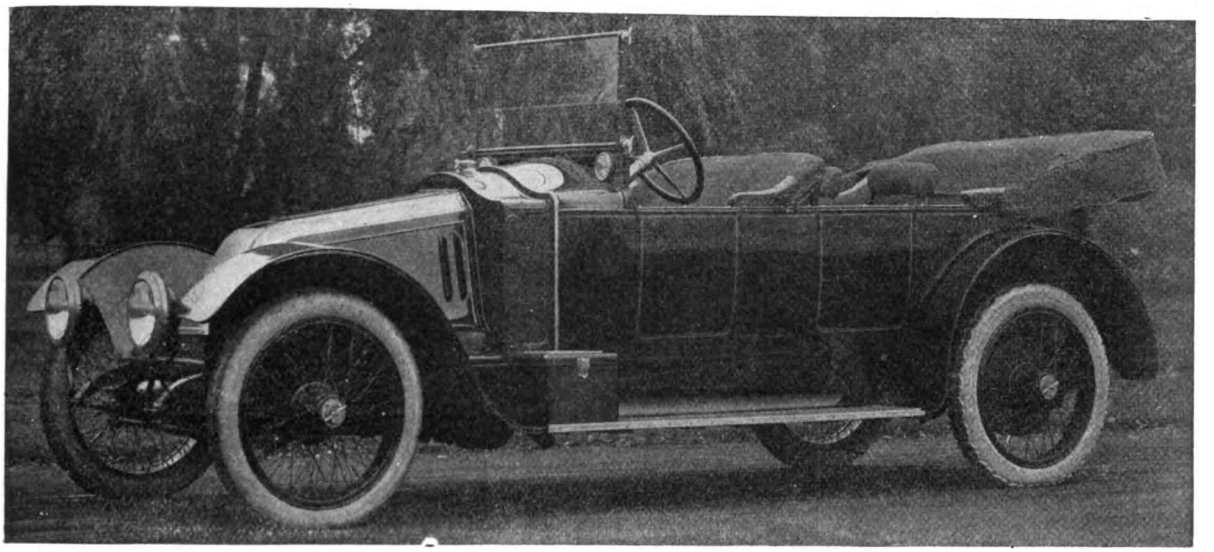
Don't Wait—Wire

Monarch Motor Car Company

R. C. HUPP, President

Detroit, Mich., U. S. A.

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The NEW "KEETON" and the NEW "CAR-NATION"

Are Now READY—HAVE YOU SEEN THEM?

The new "Six-48" Keeton combines the beauty of line and detail of Europe with the sturdy construction and economical manufacturing methods of America.

The distinctive lines and appearance of the Keeton attract and hold attention—they interest a possible purchaser at once—your sale is half made when the customer sees the car.

We are looking for first class representation in unoccupied territory, and have an agency agreement that is very fair and profitable. Have we heard from you?

Keeton Specifications

Electric starting.
Full electric light equipment.
Six cylinders cast en bloc, large valves.
Small bore, long stroke.
All moving parts completely enclosed.
Exceptionally powerful and flexible.
Radiator at rear of motor in proper and protected position.
Centrifugal pump and flywheel fan insure ample cooling.
Four speeds forward in transmission.
Direct on 3rd—geared up on 4th.
Left hand drive—right hand control.
Wire wheels—with extra detachable wire wheel.
Long 136-inch wheelbase—long springs, special alloy spring steel, nearly flat under load.
Chrome Vanadium Gears and shafts on imported annular bearings.
Pressure gasoline feed.
Very roomy and comfortable bodies.
Best of foreign practice adapted to American road and touring conditions
Very complete and detailed equipment.

PRICES F. O. B. DETROIT

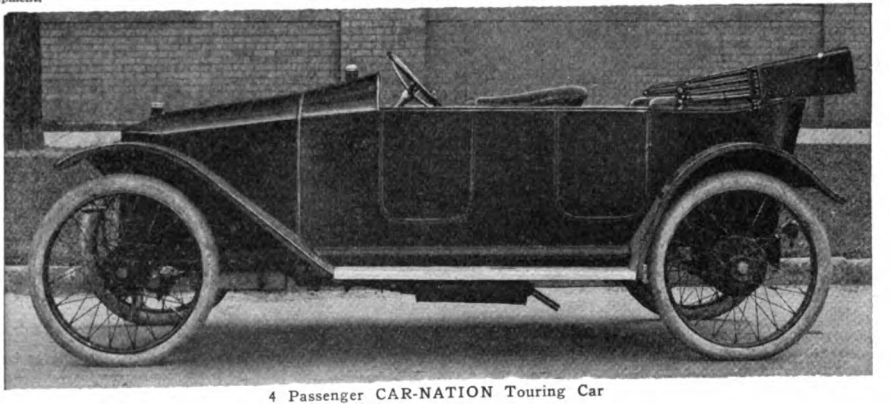
2 Passenger Roadster, completely equipped.....$3250.00
7 Passenger Touring Car, completely equipped..... 3250.00

A full line of open and closed bodies.
Interesting literature sent on request.

America's First Cycle Car

The Car-Nation is not an experiment. Every part in the car is standard and has been used in cars costing over $1,600. Think what this means to you, when you know that every single part has been thoroughly tested and approved of before being selected for the "Car-Nation."

These cars have been tested out and proven their success under every conceivable road and weather condition.



4 Passenger CAR-NATION Touring Car

Car-Nation the Car for the American Public

2-Passenger **$495**

4-Passenger **$520**

Think of the general utility of the Car-Nation. Easy to handle, light, economical, fast and lots of snap. You can go any place and do anything with it that you can with a big car and more too.



2 Passenger Tandem—Front View

Car-Nation Specifications

Unit Power Plant—Motor, 4 cyl. en bloc, 3⅝ x 3¾, "L" head—large valves and bearings. Very quiet and powerful.
Ignition—Magneto—Fixed Spark.
Lubrication—Constant Level Splash—Plunger Pump.
Carburetor—Approved Type—very economical.
Cooling—Thermo Syphon. V-shaped Radiator—adjustable belt-driven fan.
Clutch—Multiple steel disk type running in oil.
Transmission—Selective type, 3 speeds forward and reverse. One lever control.
Drive—Bevel gear through concentric torque tube with one universal joint.
Rear Axle—Semi-floating Type. Hyatt Roller Bearings.
Brakes—Emergency, Internal Expansion on 10-in. drum on rear wheels. Service, external contracting on transmission shaft.
Wheels—Detachable wire—30 x 3-in. clincher rims and smooth tread tires.
Control—Left hand drive, center control.
Wheelbase—104 inches.
Tread—48 inches.
Standard equipment—Horn Head Lamps and Tail Lamps with set of tools.

PRICES

Model A—2 Passenger Roadster.....$495.00
Model B—2 Passenger Tandem Type..... 510.00
Model C—4 Passenger Touring Car..... 520.00

Extra equipment—Electric starting and lighting system, top, windshield, speedometer, extra wire wheel, electric horn, storage battery, 3 electric lights and switch. Furnished as desired at very reasonable prices.

Manufactured by

Keeton Motor Company

Detroit, U. S. A.

See Our Exhibits at New York and Chicago Shows

DEALERS—Be the first in the field in your territory with a proven cycle-car—no experiment but thoroughly tested and proven under all conditions. Get in touch with us at once. **We are now producing these cars.**

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STUTZ—THE CAR THAT MADE GOOD IN A DAY

Montamarathon Tacoma | Santa Monica | Free for All Corona | Elgin National Trophy | Corona Road Race | Potlatch Trophy Tacoma | Inter-City Trophy Tacoma

STUTZ—THE CAR THAT MADE GOOD IN A DAY

Sturdy Stutz Proclaimed Champion

The year 1913 was a period of splendid achievement for the Sturdy Stutz. It saw the Stutz outclass the most carefully built cars in the world, in the most severe tests ever attempted. Its permanent record stands chiseled in the annals of motor car making in unquestionable terms.

A Year of Triumphs

Since July 5th, 1913, the Stutz has won Seven Consecutive Road Race Victories. In these seven races, totalling 1847.86 miles of service at an average rate of 70 miles an hour, the performance of the Stutz has been the most consistent ever seen on American tracks.

Such a remarkable record is too convincing to be passed by. The triumph of the Stutz comes from building into the car the utmost stamina and endurance, with just the right balance between weight and power.

Built to Endure

The years of gruelling service on the race tracks and in private use, which the Stutz has undergone, have been an education to our designers and mechanics. As a result of these tests, they have learned just what must be put into a car to make it a permanent success, and all these things have been built into the Stutz.

You get perfection of form as well as mechanical perfection when you buy your Stutz. Its stamina, sturdiness, beauty, roominess and comfort will please you always.

See the Stutz at the Shows

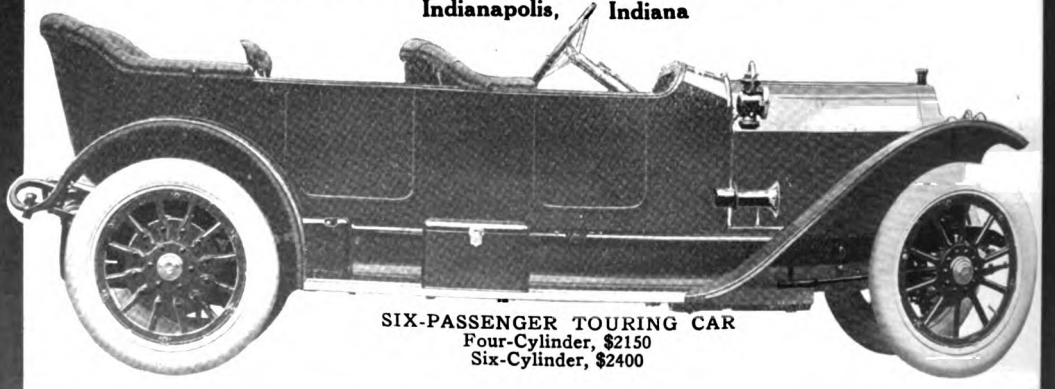
The Stutz will be on exhibition at Space B-7, First Regiment Armory, Chicago, and Space B-10, Grand Central Palace, New York. Take the time to look it over carefully. You cannot afford not to know the facts about this truly remarkable car.

Write for our new illustrated catalog No. A-15.

DEALERS: We still have a little desirable territory open and have an interesting proposition to make responsible dealers. Write or wire quickly.

STUTZ MOTOR CAR COMPANY

Indianapolis, Indiana



SIX-PASSENGER TOURING CAR
Four-Cylinder, $2150
Six-Cylinder, $2400

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The "Kangaroo"



A Mile a Minute Detroiter $900

Insistent demand from every automobile center—in America and abroad—for a sporty, racy model without trimmings, and with its speed showing in every line leads to the announcement of a new Detroiter model. It is called the "Kangaroo."

¶ On the track this car, with its new and bigger 1914 Detroiter motor, has made more than a mile a minute. It is stripped of every ounce of superfluous weight; has flush lines everywhere; smooth drawn upholstery; concealed lighting apparatus; not an ungainly angle or hook or knob anywhere. Just speed.

¶ The equipment is like that of a track athlete—everything essential but no more.

¶ Tire carrier with tool box enclosing full equipment of tools and repair kit, is at the rear, inclined above fuel and oil tanks of 20 and 3 gallons capacity respectively. Utility box is hidden beneath the seat.

¶ Lighting switch, magneto switch, pedals and speedometer are in the sloping dash. Battery lighting or Prest-O-Lite is optional. Detroiter-Remy self-starting and lighting system is $125 extra.

¶ Colors are fire-chief red or dulled gray, with black fenders.

¶ A car with such lines, with so much speed, with every detail worked down to the finest degree of engineering and artistic exactness, is something new.

¶ And only 150 of these speedsters will be manufactured this season. Also—two weeks must be allowed between receipt of order and delivery.

¶ The safe course is to get in specifications quick.

BRIGGS-DETROITER COMPANY

499 Holbrook Avenue **Detroit, Michigan**

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IT ISN'T NECESSARY

To Remove a Battery from Car for Recharging on Account of Its Sulphated or Discharged Condition When Used With the

LEECE-NEVILLE
Starting and Lighting System

WHY?

BECAUSE—of the efficiency and capacity of the generator—12 amperes at 13 volts at car speed of 18 miles per hour.

BECAUSE—the generator "cuts-in" and starts to charge the battery at a speed of 7 miles per hour.

BECAUSE—the generator does not "cut-out" until car speed is reduced to 5 miles per hour.

A car rarely runs less than 5 miles per hour — therefore, the Leece-Neville generator charges the battery almost as many hours as the car runs.

This cutting-in at low speed has enabled the Haynes Automobile Co. to use the Vulcan Electric Gear-Shift on thousands of cars without injury to the battery in any respect.

The Leece-Neville Starting and Lighting System was the first double-unit, self-regulating system on the market.

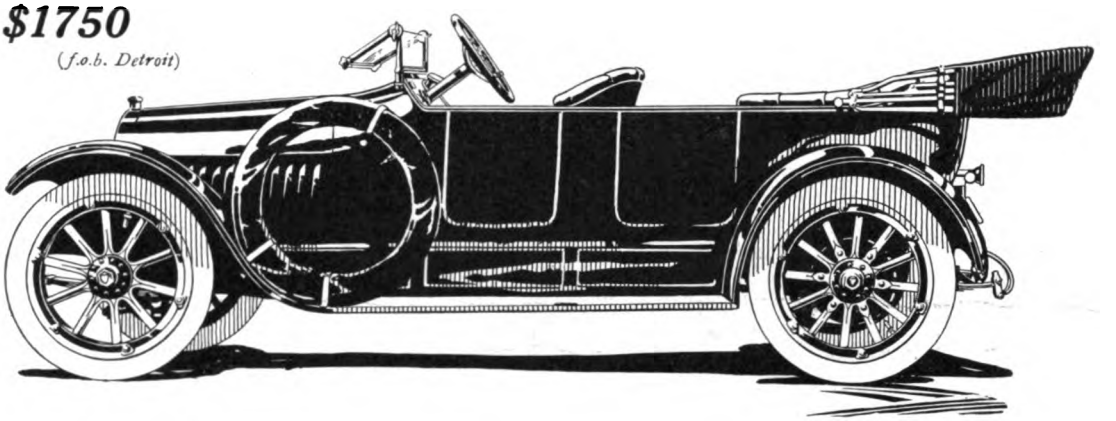
The Leece-Neville System Will Be Displayed and Demonstrated on HAYNES Cars at the New York and Chicago Shows

THE LEECE-NEVILLE COMPANY, Cleveland, O.

(24)

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HUDSON Six-40
$1750
(f.o.b. Detroit)



How Long Will Men Pay This Price for a Four?

You men who sell cars have something new to consider.

The trend for years has been toward Sixes. Fourteen leading makers now build Sixes exclusively, and 37 of them build Sixes for best.

Four-cylinder cars have long been practically unsalable at a price which would buy a good Six.

This season comes the HUDSON Six-40 to sell at $1750—a price much below any comparable Four. It weighs much less than Fours of equal capacity. It costs much less to operate.

It weighs 400 pounds less than last year's HUDSON "37." It consumes one-fourth less fuel.

The Handsomest Car

The handsomest car on the market this season is the new HUDSON Six-54. And this Six-40 is that same car made smaller. Wheelbase, 123 inches.

It has the same true streamline body, the same perfect equipment. There are two disappearing tonneau seats. The gasoline tank is in the dash. The extra tires are carried ahead of the front door.

The Six-40 has the "One-Man" Pantasote top. It has quick-adjusting side curtains enveloped in the top.

It has dimming headlights, the Delco patented system of electric lighting and starting. No car at any price, up to six months ago, offered so many attractions.

And the car is a HUDSON, designed by Howard E. Coffin, who last year brought out the HUDSON Six-54, the most popular Six of the year.

This Marks a New Era

This HUDSON Six-40 enters a field where tens of thousands of Fours have been sold every year. It undersells those Fours, underweighs them, and shows less operative cost. It outclasses any Four in equipment and appearance.

Beyond any question, it comes to capture that field, as Sixes have captured the whole field above that.

This is the most attractive offer that the HUDSON factory ever put out. It offers to dealers a very rare opportunity.

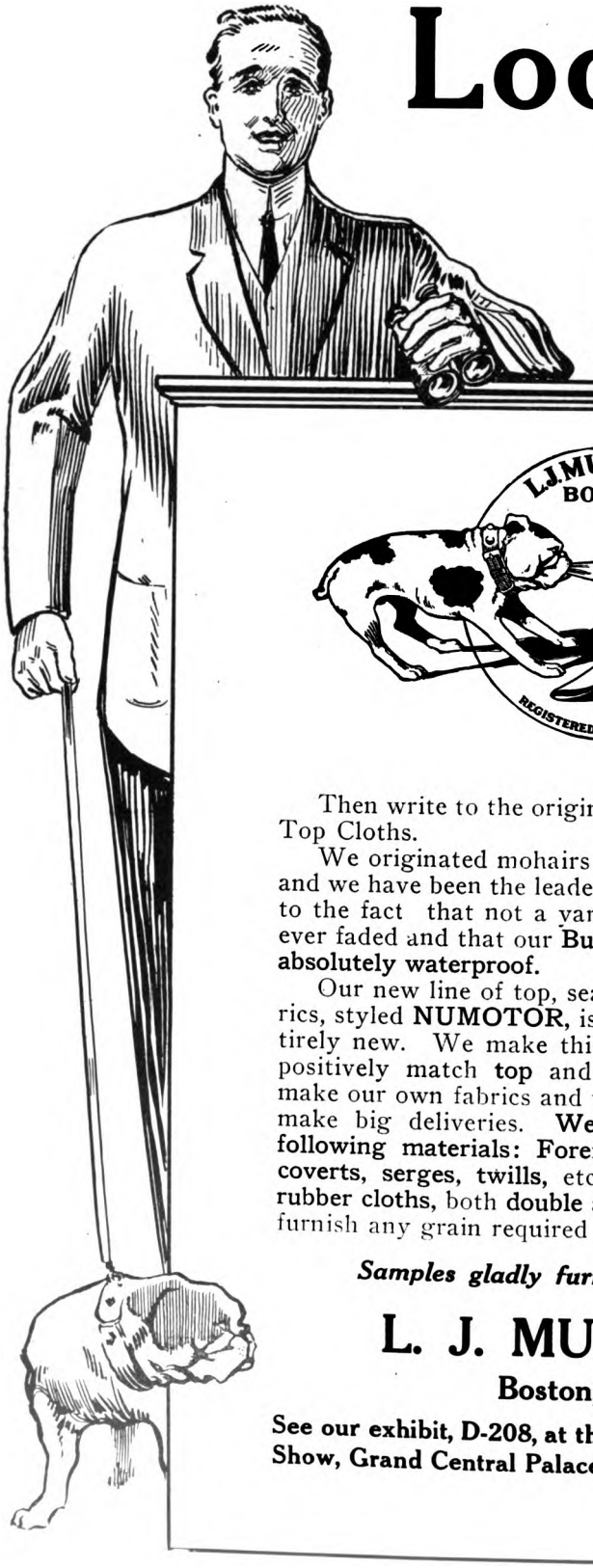
This Six-40 will be, during the next few months, one of the best-advertised cars in the country. We shall use the National Weeklies, Farm Papers and Magazines in a very large way.

We seek dealers in unoccupied territories.

Hudson Motor Car Company

7756 Jefferson Ave., Detroit, Michigan, U. S. A.

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Looking for Mohair?



Then write to the original manufacturers of **Mohair** Top Cloths.

We originated mohairs for automobile tops in 1905 and we have been the leaders in this line ever since, due to the fact that not a yard of our black mohairs has ever faded and that our **Bull Dog** quality is guaranteed **absolutely waterproof.**

Our new line of top, seat cover and upholstery fabrics, styled **NUMOTOR,** is something original and entirely new. We make this in various colors and can positively match **top** and **upholstery material.** We make our own fabrics and we are always in position to make big deliveries. **We are headquarters for the following materials: Foreign** and **domestic mohairs, coverts, serges, twills,** etc. **Auto leathers** and **auto rubber cloths,** both **double** and **single** texture. We can furnish any grain required and we solicit a trial order.

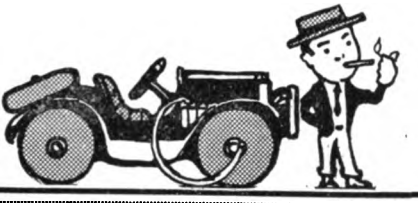
Samples gladly furnished upon request

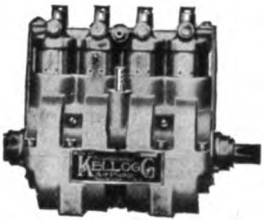
L. J. MUTTY CO.

Boston, Mass.

See our exhibit, D-208, at the 14th National Automobile Show, Grand Central Palace, New York, Jan. 3 to 10th.

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KELLOGG  TIRE PUMP



NO car is complete in standard equipment without a Kellogg Power Pump—the Standard upon which manufacturers of America's finest cars have depended successfully during the past five years.

Manufacturers and dealers who are trying to sell their product for 1914 without Kellogg equipment are robbing their cars of one of the most essential accessories on the market today. Do not jeopardize a sale through failure to supply this standard pump which thinking purchasers insist upon—nor do not try to substitute something "just as good."

Dealers should bear in mind that we can furnish attachments for equipping practically all motor cars new and old, and that there is a vast field among owners of old cars not so equipped who expect to operate their cars for another year or so.

The same care in selecting materials—the same painstaking workmanship which has accorded the Kellogg four cylinder pump the highest approval by engineers and inspection departments of the leading motor car makers, is in evidence throughout our plant in the manufacture of all Kellogg Products.

In addition to the power air pump we are also producers of the

Kellogg Electric Motor Driven Garage Pump

The solution of the garage pump problem.

Kellogg Self Starting Unit

Simplest, most powerful, and best.

Kellogg Hand Pumps, Pressure Gauges, Valve Grinders, Grease Guns and Primers

We have a complete line and every product excels in its own particular division.

See us at the Shows—and if you are not coming to the Shows, write us for full details.

KELLOGG MANUFACTURING COMPANY

Rochester - - - - - New York

New York City
1733 Broadway

San Francisco, Cal.
444 Market Street

Chicago, Ill.
1112 S. Michigan Avenue



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MERCER

AT THE SHOWS

Series H, Close-Coupled Five-Passenger
Series J, Raceabout

Series M, Large Five-Passenger
Series O, Runabout

EXAMINE Mercer cars at the New York, Chicago, Philadelphia or Boston shows, or examine them anywhere you like. A comparison will show you why the Mercer is America's leading medium weight four-cylinder automobile.

Despite the apparent six-cylinder popularity there is a rapidly growing demand for a substantial four-cylinder car possessing power, speed, strength, comfortable riding qualities, graceful appearance, and real honest value. An examination will prove that Mercer cars meet this demand in every way.

Mercer cars are built in limited quantities. The finest materials obtainable are used, the extreme limit of accuracy in workmanship is demanded, and embodied in each car is the best that can be had in the way of testing and inspection. We invite your attention to the following features.

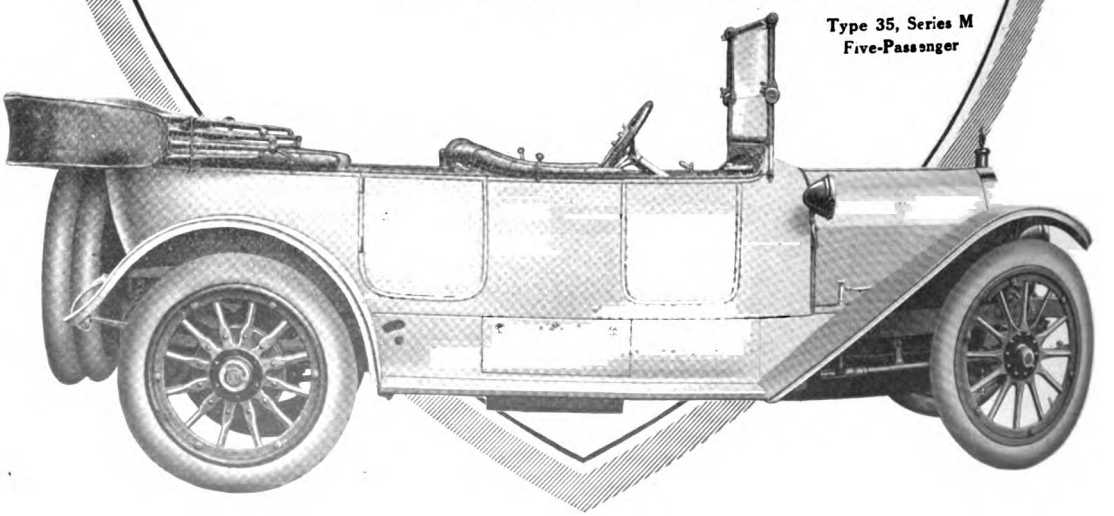
Four speed gear box, with direct drive on fourth.
Service brake operating on main shaft of gearset.
Multiple disc clutch, with forty-four steel to steel plates running in oil.
Two-spark ignition.
Large Tungsten steel valves.
Light reciprocating parts.
Full floating rear axle.
Crankshafts, camshafts, connecting rods, frame and axles from special alloyed steel, heat-treated so as to obtain the greatest degree of strength and durability.
A reliable electric lighting and starting system.

Descriptive Literature Sent on Request

MERCER AUTOMOBILE COMPANY

700 Whitehead Road, Trenton, N. J.

Type 35, Series M
Five-Passenger

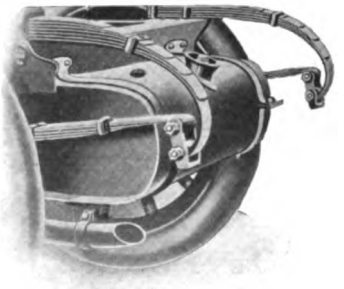


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The Triumph Magnetic Gasolene Gage

Part of the 1914 Standard Equipment on

PIERCE-ARROW
PACKARD
LOCOMOBILE
SIMPLEX
LANCIA
STEVENS-DURYEA
MARMON
CADILLAC
MERCER
COLE
MOON
STANLEY STEAMER
AND OTHERS



WHEN such cars as these have standardized the TRIUMPH MAGNETO GASOLENE GAGE as a unit of their equipment it indicates the quality and usefulness of such a device beyond the shadow of doubt.

¶ Triumph Gages are built on a scientifically correct principle and in such a way as to render any escape of pressure impossible, even though the glass face of the gage indicator become broken through accident. Upon receipt of blue prints showing types of gasolene tanks, and indicating the desired location of gage, we will be glad to submit quotations on your requirements.

Guarantee

¶ We guarantee all moving or working parts of any Triumph Gage, if used on an automobile, against wear for a term of two years. We guarantee the magnetic principle of the gage for a term of five years.

BOSTON AUTO GAGE CO., Boston, Mass., U.S.A.

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Broadway at 54th Street, New York

OFFICIAL HOTEL:

Automobile Club of America
American Automobile Ass'n

Near 50th Street Subway Station 53d Street Elevated and All Surface Lines

Ten Minutes to Grand Central Palace by Surface Car



"Broadway" Car from Grand Central Depot Seventh Avenue Car from Pennsylvania Station

Convenient to the Show

NEW AND FIREPROOF **STRICTLY FIRST CLASS**

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Excellent Restaurant---Moderate Prices

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Send for Booklet **HARRY P. STIMSON** *Formerly With Hotel Imperial*

Headquarters for Automobile People

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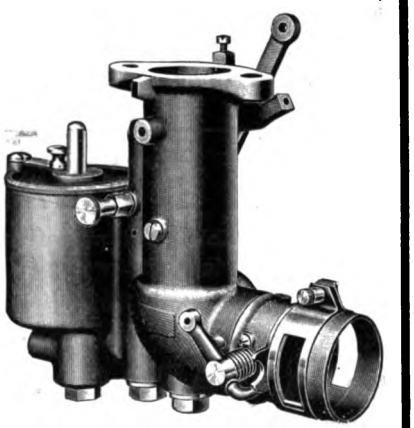
ZENITH

"Gives Standard Carburetion"

SIX years on the European market—and two years on the American market—*without a change.* WHY?

To have a record like this and show a constant growth in sales a carburetor must embody some vitally important principle—that uniformly makes good.

Car manufacturers and dealers are invited to familiarize themselves with the reasons why.



Write and we will tell you

ZENITH CARBURETOR CO., Detroit, Mich.

AGENTS:
Mercedes Repair Company, 159-161 East 54th Street, New York
Motor Parts Co., No. 185 Columbus Avenue, Boston, Mass.
Motor Parts Co., No. 818 North Broad Street, Philadelphia, Pa.
Fawkes Auto Company, Minneapolis, Minn.
René J. Marx Company, No. 1062 Geary Avenue, San Francisco

ROFFY GLARELESS HEADLIGHTS

The Roffy Glareless Lamp projects a powerful beam of pure white light which illuminates the roadway for two city squares, and complies with the strict headlight ordinance of New York and other cities.

Takes no more current than an ordinary headlight.

Absolutely no glare to dazzle pedestrians.

By the application of an optical principle in a series of accurately ground lenses the light does not scatter or waste on objects at which it is not focused.

The light rays never rise higher than the top of the radiator and cannot reach the eyes.

A pair of Roffy Lamps act as both head and side lights. A switch provides for reducing the lights to half strength while the car is standing.

Attached to the radiator or other part of the car in a few minutes. For electrically equipped cars only.

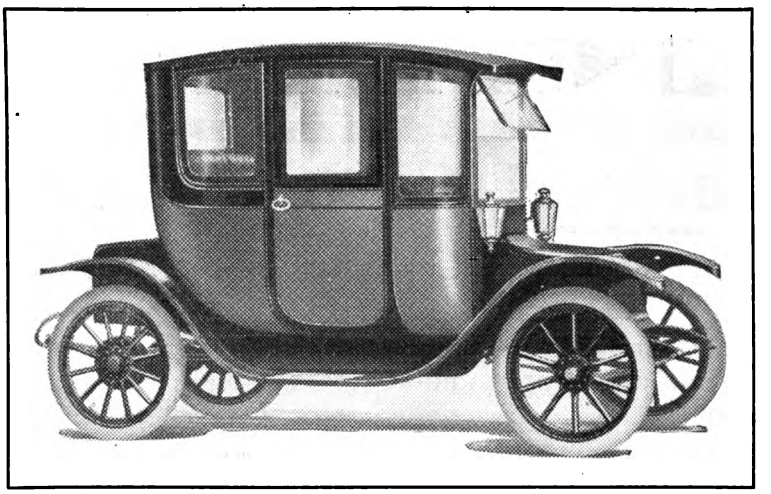
Nickel finish, Tungsten bulbs and switch. A splendid opportunity for dealers. Space D-25, New York Show.

Headlight Glare has been prohibited in New York, Philadelphia, Rochester, Syracuse, Chicago, Atlantic City, Brooklyn, Kansas City and Washington. Other cities and towns following rapidly.



ROFFY-GRACE CORPORATION
1926 BROADWAY, NEW YORK

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We Will Show the Only Popular Price

Electric Coupe

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STANDARD ELECTRIC

Some desirable territory open for right dealers

$1990 F.O.B. FACTORY

Progressive dealers are taking open territory at rate of 3 per week

We will also exhibit this wonderful dealers proposition at N. Y. City in the Hotel Martinique during week Jan. 3rd to 10th

STANDARD CAR MANUFACTURING CO., Jackson, Mich.

Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The **Bicycling World** FOUNDED 1877
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Motorcycle Review

Published Every Tuesday—$2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

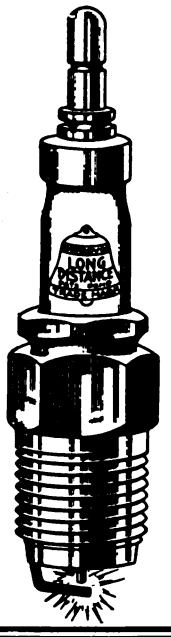
BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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WANTED DEALERS JOBBERS

—to Handle Spark Plugs which are unconditionally

Guaranteed for Life



Every plug or set of plugs sold to the user is backed up by an iron-clad legal guarantee signed by the Long Distance Spark Plug Co., which entitles the holder to exchange defective or broken plugs. If any plug goes wrong from any cause whatsoever, whether by accident or otherwise, we will give a new one in exchange.

Improved Long Distance Spark Plugs

are quick sellers. They sell for $1.50 each but are cheapest in the long run. First cost—only cost. Put up in attractive package for counter display. Good margin of profit for both dealer and jobber. Most motorists buy full set of four in order to get one plug free. Dealers and jobbers are requested to write for our special 1914 proposition. Electrotypes for use in your catalogue furnished free.

$5000.00 In Prizes to be Divided Among Retail Dealers.

With every set of improved Long Distance Spark Plugs sold, the dealer is privileged to take in four old plugs and allow 25 cts. for same. To the dealers who take in the greatest number of old plugs, a prize of $1,000 will be given. Smaller prizes totaling $4,000 will be apportioned to other dealers. Every dealer who hustles stands a good show to win big rewards in addition to big profits. Address for full details.

LONG DISTANCE SPARK PLUG CO. 212 South Illinois Street, Indianapolis, Ind.

TO CAR OWNERS—Ask your dealer to show you these Improved Long Distance Spark Plugs. If he cannot supply you, we will send one postpaid on receipt of $1.50 or five for $6.00. If full set of four is ordered, we will take in four old plugs, regardless of condition and allow 25 cts. each for same, making total cost for five plugs $5.00.







Quality Reigns Supreme



1914 catalog mailed on request

EDMUNDS & JONES MFG. CO.

Illuminating Engineers

Detroit Michigan

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Do Your Own Welding!

Save time and money on repair jobs! Don't send out your repair work. You can now *do it yourself* - and save a lot of time for your customers and money for yourself.

Don't buy and wait for new parts! You can *make old parts as good as new* by using the

Cox Welding Outfit

For Welding and Carbon Removing

Complete in every detail. Will do every possible welding job. Very simple in construction. Can be used on parts of iron, steel, brass, bronze and aluminum. Any average mechanic can become adept in its use in a short time. We furnish complete instructions with each outfit. It is *safe* and *sure*. Every job you do means—*Extra Profit for You.*

The outfit will pay for itself many times over. It means quick repair work—and *all of it done in your shop!*

The Cox Outfit is not only excellent for welding, but it can also be used to *Quickly and Completely Remove Carbon from Cylinders!*

Thus you have a dual outfit—a profit maker two ways! Its use is doubled. It saves time in two ways—and produces two profits!

Send for free Catalog and full information—NOW.

SEE OUR EXHIBIT AT THE NEW YORK SHOW

COX BRASS MFG. CO.

ALBANY, N. Y.

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3445 Michigan Ave., Chicago, Ill.
870 Woodward Ave., Detroit, Mich.
1216 Van Ness Ave.
San Francisco, Cal.





Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping *all* tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by
DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

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Saved!

Weed Tire Chains enable you to
make sharp turns and quick stops
momentary loss of control mean

The above picture illustrates one of
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bad road weather—when nothing
appears directly in your path and
of a second you must make a sharp
apply the brakes. It is then you
firm unfailing grip on the road
only be obtained by equipping

Weed Anti-Skid Ch

The Only Device that Absolutely Prev

The memory of one accident
enjoyment in the use of a car. W
risk of such accidents and why
tires of motoring *forever after, w*
can surely be yours by equipping
tires with WEED CHAINS

WEED CHAINS cannot injure
"they creep." Easily put on in a
the use of a jack or other tool
packed with every pair.

Universally Used

WEED CHAINS are generally
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At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by
DOMINION CHAIN CO., Limited, 12th Ward, Niagara Falls

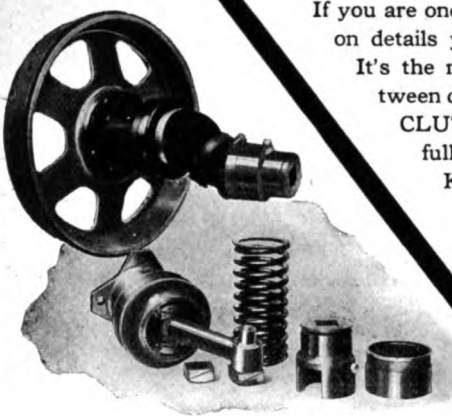
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can solve your clutch problem

If you are one of those concerns who are rather keen on details you know that the CLUTCH talks. It's the most frequent point of contact between driver and car. KONIGSLOW'S CLUTCHES will speak as forcefully for you as they do for KONIGSLOW.

Don't wait till you are ready to place orders---write today to

KONIGSLOW CLEVELAND



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KONIGSL CLEVELA

For FORD Cars
A perfect hand warmer



We furnish you complete, a new wooden steering wheel *rim*, with the heater installed (as indicated with illustration) and wire connection from wheel to magneto which furnishes the heat. To turn on the heat you insert the plug in socket nearest the ribbed part or heater on left-hand side of wheel. To turn off heat, remove plug and place in next adjoining socket.

The heating coil is composed of an indestructible metal tube in which is carried a heavily insulated heating wire. It is impossible to get a shock.

The rim we furnish is all ready to screw on in place of the rim you now have.

Write today for detailed description. Satisfaction guaranteed. Price, $10. Prepaid in U. S.

The Warm Hand Steering Wheel Corp., Inc.
Poughkeepsie, New York

Patented April 23, 1907; Feb. 11, 1908; April 2, 1912. Other patents pending

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"Thoroughness"

Each B trademarked product is manu
today with the same care, precision, and in
attention that attended the production of
forging made by us nearly half a century a

Although the volume of production has v
creased, the company's policy of *thorough*
not allowed the quantity of the out-put to
from its quality.

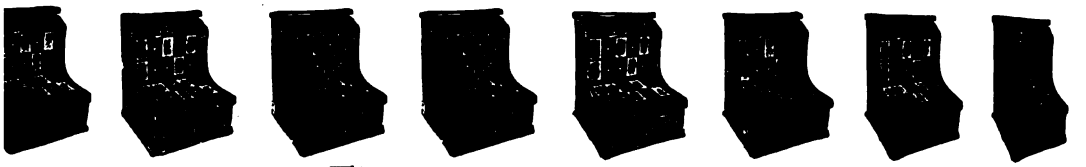
This policy of *thoroughness* applied to every
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It explains why Billings & Spencer produ
recognized as the products of "standard c

Makers of stock and special forgings. Cata
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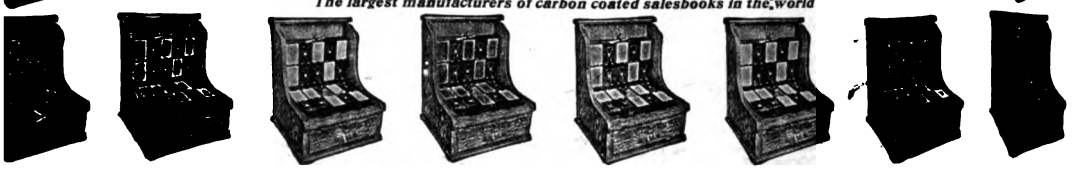
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More Than 100,000 Merchants will tell you the McCaskey System is only One Writing. Prevents Disputes and Forgotten Charges. Every Account Totalled and Forwarded with each purchase. Is an Automatic Collector. Limits Credit automatically. Abolishes Bookkeeping—Night and Sunday Work—Posting and Worry. *A POSTAL WILL TELL YOU MORE*

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"CAMPBELL ACCESSORIES"

Let Us Improve the Looks of Your Car 99%

Water-proof **SEAT COVERS**

Little Steam **VULCANIZERS**

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SEE US AT THE NATIONAL SHOWS

New York—GRAND CENTRAL PALACE—Jan. 3d to 10th

SPACE D: 37-4th FLOOR

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We Want Agents and Distributors—Also Friends

See Us at CHICAGO Jan. 23d to 30th

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1514 MICHIGAN AVE., Fulton McCutchan Bldg., Near the Armory

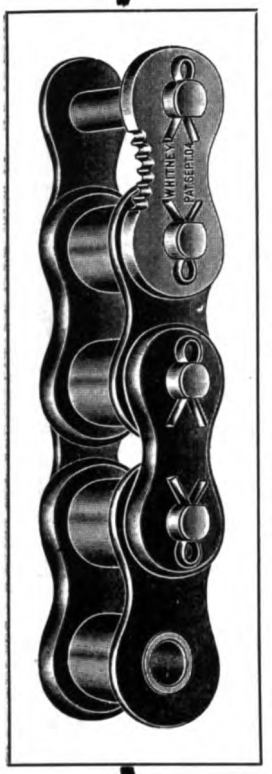
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We want every Purchasing Agent, Jobber, Accessory Dealer and Auto Agent, to call and get a real money line.

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THE PERKINS-CAMPBELL CO., 622 Broadway, Cincinnati, O.

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"WHITNEY" Chains

WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

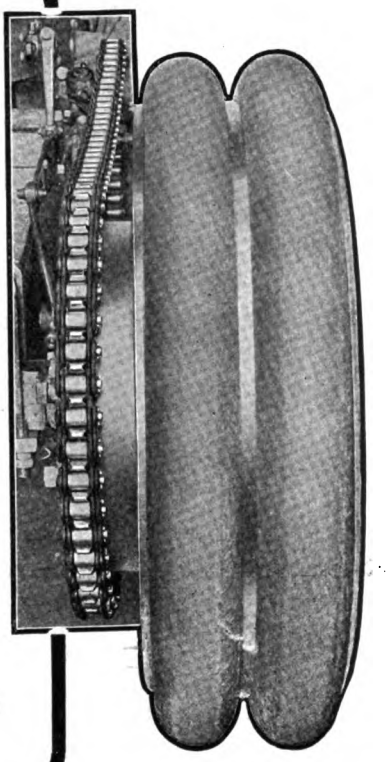
This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

The Whitney Mfg. Co.
HARTFORD, CONN.



We Have a Few Sets of

Bound Volumes of Motor World

for the year covering October 6, 1910 to September 21, 1911.

Each set consists of four volumes

$2.50 a Volume
$8.00 for the Entire Year (Four Vols.)
Express Prepaid

These prices apply to the stock on hand only and will be withdrawn when present supply is exhausted.

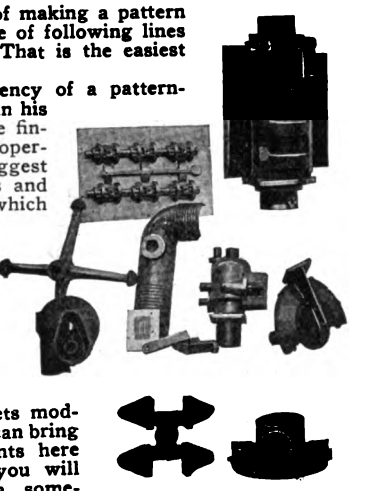
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1600 Broadway New York

Practical Engineering Knowledge and Foundry Experience applied to your patterns.

The problem of making a pattern is not simply one of following lines on blue-prints. That is the easiest part.

The real efficiency of a pattern-maker is shown in his ability to see the finished pattern in operation—and to suggest and devise ways and methods by which foundry production can be increased and foundry costs decreased.

It takes experience—brains—and "know-how" to deliver a service that meets modern needs. You can bring your blue-prints here confident that you will get that "extra something" that means real efficiency.



Michigan Pattern Works
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NO-SHAMMY

Agency Appointments

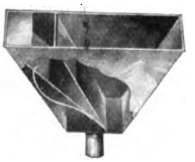
DURING Automobile Show Week we expect to appoint agents for Eastern territory and visit personally New York City dealers.

This information should be of vital interest to accessory salesmen and the trade in general. It means that territory will be apportioned at that time for an exceedingly profitable article; necessary to, and well within the means of every car-owner.

It is the ***No-Shammy Funnel*** (patented), positively guaranteed to remove all water and dirt from gasoline; thereby eliminating fully 99% of carburetor troubles. This funnel has been on the market for several years and thousands are in daily use.

Our intensive advertising and merchandising plans for 1914 cannot help but make the proposition distinctively attractive.

Write us prior to January first, so that a definite appointment can be arranged for a conference with our Mr. O. C. Foster, who will be present at the New York Show.



Applications for territory may be mailed to the Cleveland office at any time, and will be given consideration in the order received.

The No-Shammy Products Co

O. C. FOSTER, Sales Director

511 Hippodrome Building Cleveland, Ohio

NO-SHAMMY



THE MOTOKART

was the first cycle car type commercial vehicle built in America. It has made good, its usage is universal and unlimited.

ENGINE: 3⅝ x 4 Two Cylinder, 4 Cycle Water Cooled.

WHEEL BASE: 69" Tread 44".

Price $400.00

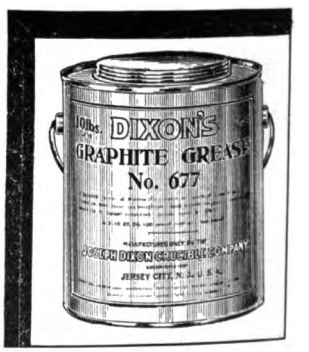
Agents wanted everywhere

Tarrytown Motor Car Co., Inc.

1790 Broadway, New York City

DIXON'S

Graphite Transmission and Differential Grease No.677



Reduces the Rate of Depreciation On Your Car

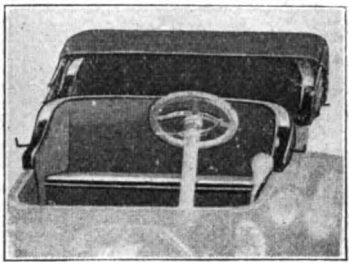
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Joseph Dixon Crucible Co.

Established 1827

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SEAT COVERS



For HUPP REGAL BUICK FORD REO

We make a specialty of Ford seat covers, and if the car you are handling is not mentioned above, write us.

Our covers are equipped with latest and most convenient way of attaching to car. All work guaranteed to fit and be first-class in every respect.

The above cut shows a set of our covers attached to car.

Nothing adds more to the neat appearance of a car than a nice set of covers, besides they protect the upholstering.

For our mutual benefit we suggest you write us for agent's proposition—it's good.

Get the best when you buy.

CENTRAL AUTO TOP CO.

Manufacturers of Auto Tops, Seat Covers and Upholstering

330 North Illinois Street Indianapolis, Indiana

LEWIS VALVES Toledo

This One Thing—Valves

Lewis Valves are used by the leading and best known builders of Automobile and Marine motors, for only one reason—*Lewis makes better valves*—Lewis Valves last longest, give more power, because they are heat-treated, right.

Our entire plant and organization is devoted to this one thing. We make nothing but valves an make the *best* valves. For prices send blue-prints and ask Lewis about it.

Lewis Electric Welding & Mfg. Co.
TOLEDO, OHIO

Packard CABLE

PACKARD CABLE goes every other make of cable one better by providing the rubber insulation and braids with a series of flexible enamels, put on by a patented process.

These enamels protect the rubber from the over-vulcanizing effect of heat and the injurious effect of oil, water and dirt to which all cable is subjected.

Demand Packard cable with every starting and lighting system. Don't let the maker save a few cents on each system at the expense of the reputation of your car by substituting cheaper cable. Get the best. Send for sample to test and for our latest price list of 27 kinds of cable for every need.

This Hanger Free To Dealers

A six-color reproduction of the original Packard Girl by Liebscher, 16x20 inches. Makes a handsome decoration for office or garage. Sent free to dealers who write on their own stationery.

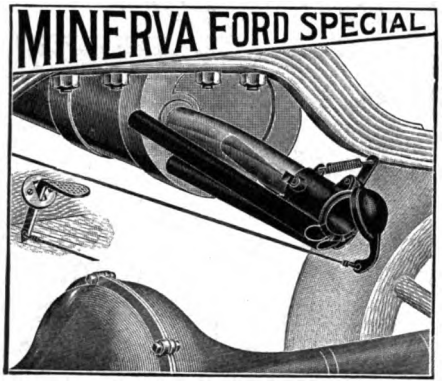


The Packard Electric Company

Dept. D Warren, Ohio

Packard denotes superior Quality (51)

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The MINERVA FORD HORN installs in five minutes and sells for five dollars complete. It's an extremely saleable specialty with a decidedly attractive profit.

You can make more on this horn because we give you the benefit of our quantity production.
The horn is made right of non-corrosive metal. It will not clog and is instantly on the job with a clear, mellow yet WARNING NOTE.
Your pocket and your customer will like this horn.

Write for agents discount sheet

MINERVA HDW. MFG. CO.
Minerva Ohio
G. A. ASHTON CO, Northwestern Representative
1577 Selby Ave., St Paul, Minn.

The Atwater Kent Ford Ignition

assures perfect synchronization at all speeds; eliminating preignition and overheating—starts easily with a quarter turn of the crank and frequently without cranking by means of the starting button on the coil. It will, in addition, wonderfully increase the power, speed, flexibility and hill-climbing ability of the Ford car and is easily installed without any necessary machine work.



Write for Booklet "D" and prices.

ATWATER KENT MFG. WORKS
4940 Stenton Ave., Philadelphia

Times Sq. Auto Co.

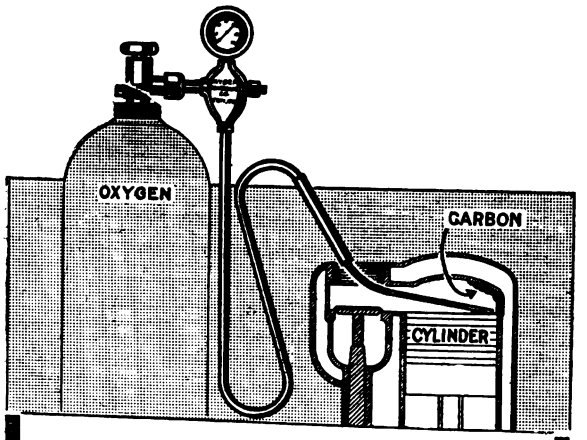
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CHICAGO
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Motors, Bodies, Tops, Tires, Everything and Anything for the Automobile at Cut Prices

World's Largest Dealers New—Used Automobiles and Accessories

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Perfect Carbon Remover $10

Will remove ALL carbon from cylinders. Easily and in few minutes. Equal of any high-priced outfit. All parts guaranteed. Keeps up efficiency of cars and trucks. BIG MONEY MAKER for garages.

Price $10
(without oxygen tank)

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Sent prepaid—cash with order or C. O. D.

OXYGEN DECARBONIZER CO.
301 River Street TROY, N. Y.
Send for Information

Marmon "Thirty-Two"

Four-cylinder, 32-40 h. p., 120-inch wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

Price, $3,000.

"The Easiest Riding Car In The World"

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Nordyke & Marmon Company (Established 1851) INDIANAPOLIS INDIANA

Sixty Years of Successful Manufacturing

Six-cylinder, 48-60 h.p., 145-inch wheel base with short turning ability eliminating the old objections to long wheel base. Body types and equipment to meet every requirement. The only big car with small car advantages. Wonderful riding qualities and surpassing power and flexibility. A car developed by years of exacting tests. Price, $5,000.

Marmon "Forty-Eight"

Wisconsin Motors

CONSISTENT

ROAD CHAMPION OF AMERICA

The Tacoma, Santa Monica, Elgin and Corona road races were won hands down by Stutz cars equipped with the consistent Wisconsin Motor—the drivers never raising the hood. Winning all these big road events of the year has accorded Wisconsin Motors the title of Road Champion of America. Write for catalog describing the following sizes:

3¾ x 5 In. 4 cyl. Enbloc
4 x 5 In. 4 cyl. Enbloc
4¼ x 5 In. 4 cyl. T Head
4½ x 5½ In. 4 cyl. T Head
5¼ x 7 In. 4 cyl. T Head
3¾ x 5½ In. 6 cyl. Enbloc
4 x 5 In. 6 cyl. Three Enbloc
4¼ x 5 In. 6 cyl. T Head
5¼ x 7 In. 6 cyl. T Head



WISCONSIN MOTOR MFG. CO.
Dept. 32 Milwaukee, Wis.

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The Atwater Kent Ford

Write for Booklet "D" and price.

ATWATER KENT MFG. WORKS
4940 Stenton Ave., Philadelphia

Times Sq. Auto

NEW YORK
S. W. Cor. 56th St. and B'way

Motors, Bodies, Tops, Tires, Everything and Anything for the Automobile at Cut Prices

World's Large
New—Cost
and

Send for "Our Pro

Marmon "Thirty-Two"

Four-cylinder, 32-40 h. p., 128-inch wheel base, body types and equipment to meet every requirement. A delightful, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

Price, $3,000.

The Logical Medium Car for the Motorist

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Nordyke & Marmon Co.
INDIANAPOLIS

SIXTY YEARS EXPERIENCE

Marmon "Forty"

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The Tacoma, Santa Monica, Elgin and Fo won hands down by Stock cars equipped with the Wisconsin Motor—the drivers never racing the last these big road events of the year has accredited Wisconsin Motors the title of Road Champion of America. Write for catalog describing the following sizes:

4 11/2 in. 6 cyl. Roadster
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WISCONSIN MOTOR MFG. CO.
Dept. 32 Milwaukee, Wis.

Six Cylinder 65 H. P. Equipped with Vulcan Electric Gear Shift.

Four Cylinder 40 H. P. Equipped with Vulcan Electric Gear Shift.

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America's First Car

Our advertising campaign will send a buyer into your showroom more than half convinced that he should own a Haynes; the sale, however, results only from a successful demonstration; it is our firm belief that, as a Haynes dealer, you possess more than a sufficient number of convincing arguments to make every demonstration result in a quick and profitable sale.

May we tell you why we believe this?

THE HAYNES AUTOMOBILE CO., 1 Main Street, Kokomo, Ind.

Pullman "Little

The Only Genuine Stre
Motor Car Built in this C

This epoch making autom
VULCAN ELECTRIC GEA
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"FOURS" and "SIXES"—$1775

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COLE

The Standardized Car

The car that started the stampede to standardization

A Cole franchise is a valuable asset to any dealer. Find out about it.

Cole Motor Car Co. of Indianapolis

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Model T Runabout	$500
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The *best car value* in the market an
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Builders of the

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For Automobiles, Motor Trucks,
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We Also Make Axles and Hubs.

MOTT WHEEL WORKS, Utica, N. Y.
R. B. ABBOTT SALES CO., Sales Agents, Detroit

"THE TUGBOAT OF LAND COMMERCE"



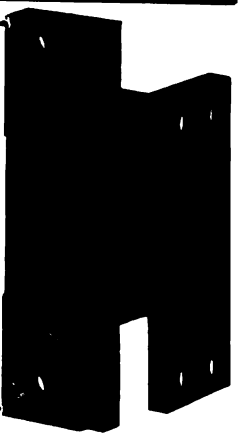
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Soss Concealed Hinges

for touring bodies, coupes, limousines, roadsters, etc., have an interlocking construction insuring strength, long wear, and absolute rigidity. The trouble avoided and time gained when hanging doors with "Soss Hinges" are important factors.

Send for catalog and full particulars.

Soss Mfg. Co.
No. 435-443 Atlantic Ave.
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Swinehart
Non-Skid Tires

The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
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Send Us Your Inquiries When in the Market for

SHEET METAL STAMPINGS

Estimates Cheerfully Furnished

THE BOSSERT COMPANY
Utica, N. Y.

"Get INTERLOCKS, Old Chap"



Prevent Blow-Outs and Punctures

Double Your Tire Mileage
Save Half Your Tire Cost

Interlock Inner Tires are easily placed between the outer casing and inner tube, and Stop Tire Trouble.

Write for Interlock Booklet that gives full information, valuable tire facts, prices, testimonials of tire experts, Interlock users, etc.

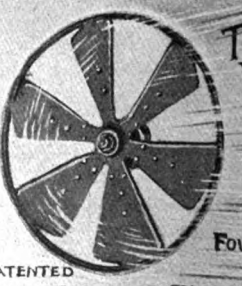
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Faultless Lighting
Infallible Starting

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The SPARKS WITHINGTON
2442
Cubic Feet
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Per Minute
Size 16
Four Other Standard Sizes

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SOLVES THE HEAVY TRUCKING PROBLEM



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Swinehart Non-Skid

The one type the non-skid life. Both the initial co pressure of chains and tension on the fabric of the casing a averting more than 9% o Swinehart (Extra) tread times the wearing value skid, and its traction at least until the tire is worn t practical.

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Double Your Tire ... Save Half Your ...

Interlock Inner Tires are placed between the inner ... inner tube, and Stop Tire Trou

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INTERLOCK INNER TIRE

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Gears Repaired at Fair Prices
Prompt Service

We offer garages and automobile repair shops prompt service on repair gears. Extremely low prices. Try us next time.

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Detachable Wire Wheels
fitted with
Houk (Quick Detachable) Rims

Guaranteed the Best in the World

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Scientifically Heat Treated

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A larger, more beautiful car, with every luxury and e Increased production brings the price down to $900.

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R. E. Olds' famous car—the leading car in The latest model sells at $1,175, completely e electric starter and electric lights. 30 to 35 ho

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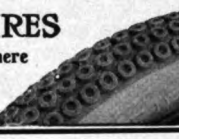
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for
Self Starting
Lighting
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Otho Motor Co., 60 State St, Boston, Mass.

PENNSYLVANIA
Oilproof
VACUUM CUP TIRES

Making Their Mark Everywhere

Pennsylvania Rubber Company
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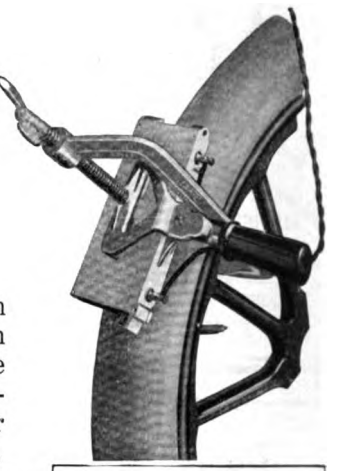
METZ "22" ROADSTER $4

The "gearless car"—no clutch to slip, no gears to strip— equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-co Bosch magneto, artillery wheels, best quality clincher tire to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline climber. You can secure EXCLUSIVE SALE in you Write for Book "B."

METZ COMPANY, Waltham, Mass., U.

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SHALER Vulcanizers



You can repair any puncture, blow-out, tear or hole in any casing or inner tube—anywhere—in a few moments with a Shaler Vulcanizer. It vulcanizes thoroughly and makes the repair the strongest part of the tire. Every Shaler has automatic heat control which makes it impossible to overcure or undercure the tire. The Shaler does not need to be watched. It works automatically. Simply clamp the Shaler Vulcanizer on your tire and it does the rest. A boy can operate it.

Model D-81 $12.50

Save Your Tires — Save Repair Bills

Prevent Blow-Outs—Treble Your Mileage

The Shaler is the Standard Vulcanizer used by the best garages and repair shops everywhere. We make the only complete line of vulcanizers, from the little $2.00 Vul-Kit for mending tube punctures to complete Garage Equipment. We are the largest manufacturers of vulcanizers in the world and our complete line includes vulcanizers of every type—Electric—Gasoline—Alcohol and Steam for every requirement.

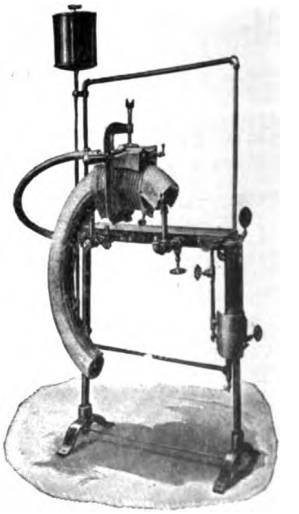


The Shaler Vul-Kit $2.00 is a low priced quick repair vulcanizer that mends tube punctures as perfectly and permanently as the most elaborate outfit. Can be used anywhere as it is so compact that it will fit in a tool-box. All progressive garages and dealers carry it in stock, as it is the best selling motorist's accessory on the market. Will burn gasoline or alcohol which rids it of the flame, soot and smoke attendant upon the use of all other small vulcanizers. The only one with a generator that converts the fuel into gas and produces and maintains temperature high enough to vulcanize a repair clear through instead of on the outside only. When the repair is vulcanized the generator is automatically extinguished. Tubes are mended on a plate inlaid with asbestos to retain the heat and prevent pinching tube. Vulcanizing surface 3½ in. in diameter. Universal clamp gives equal pressure on the tube, insuring smooth repairs. Handle, always cool, permits removal of vulcanizer from the tire while hot. Anybody can use it. Furnished complete with repair material. Fully nickeled—will last a lifetime. Burning fluid cannot spill on tire.

Shaler Model "D" For Motorists $12.50

Operates from city lighting current. When ordering, state voltage of current and whether it is direct or alternating.

The Model "D" is a safe, clean vulcanizer for the motorists own use at home. Any motorist or chauffeur can mend tubes and casings perfectly with it. The exact vulcanizing temperature is maintained by a thermostat which automatically makes and breaks the circuit—giving automatic heat control. There is no possibility of overcuring or undercuring the tire. No watching or regulating necessary. Easily attached to any electric light socket. It vulcanizes two tubes as quickly as one. Repairs Blow-Outs, Cuts, Tears, Punctures, etc. A 3½ by 7 inch repair can be made at one setting, and larger repairs by resetting. Heats in a few minutes and costs but one-half cent an hour to operate. Furnished with ten feet of conducting cord, U. S. Gov't tested heat gauge, Para Rubber, cement, and illustrated book of instructions. Finished in polished nickel. Price complete outfit, $12.50. **Write for complete catalog of SHALER Vulcanizers.**



Shaler Complete Vulcanizing Plant $60.00

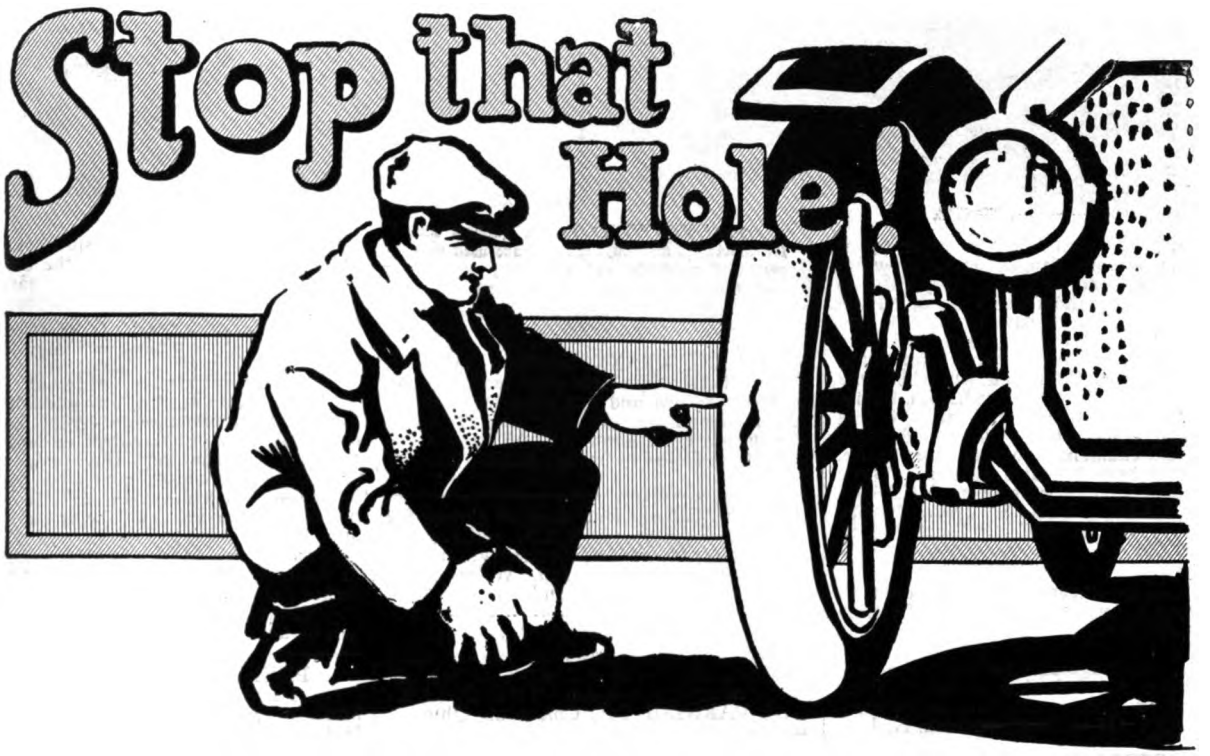
Thousands of garages and repair shops use it. Earns Big Profits and does perfect work. Will handle every practicable kind of tube and casing work. Vulcanizes six tubes as quickly as one. Automatic heat control—must vulcanize just right. **Approved wrapped tread process.**

It will pay you to equip your garage or repair shop with a Shaler Vulcanizing plant. Don't delay.

Write for Complete Catalog

C. A. SHALER CO., 450 Fourth St., Waupun, Wis.

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Dealers! Garages! Accessory Dealers!

Can You Sell

A Guaranteed Accessory that Every Motorist Needs?

More Shaler Vulcanizers Are Sold
Than of All Other Makes Combined

It's the only complete line of vulcanizers—the only vulcanizer that has automatic heat control. It's the only accessory never supplied as part of any car's equipment and every motorist needs a Shaler.

Many Dealers Make $15 to $20 a Day Extra Profit

vulcanizing tires with Shaler Vulcanizers. Some make more. One garage wrote us recently that it had 12 of our Type B machines in continuous operation and that vulcanizing was the most profitable work it did.

Have You a Vulcanizer? If not, you're losing money that should be in your pocket. It's easy to vulcanize perfectly with the Shaler Vulcanizer because every Shaler has automatic heat control that makes it impossible to undercure or overcure a tire. The Shaler does not need to be watched. It works automatically. A boy can operate it. We make a complete line of Shaler Vulcanizers in all sizes for every purpose from the $2 Shaler Vul-Kit for mending tube punctures to a complete garage equipment.

Send the coupon today and let us mail you our complete catalog with full information, dealers terms, etc., also special book for dealers only—*"Common Sense About Tire Repairs."*

Every automobile dealer needs a Shaler Vulcanizer for his Repair Shop and can increase his profits by doing vulcanizing for his customers and selling Shaler Vulcanizers to motorists for their own use at home. It will pay you to investigate. Just mail us the coupon.

C. A. SHALER COMPANY
450 Fourth St. Waupun, Wis.
Largest Manufacturers of Vulcanizers in the World

Mail Coupon For FREE Book

C. A. Shaler Co., 450 Fourth St., Waupun, Wis.

Send me catalog, dealers terms and free book *"Common Sense About Tire Repairs"* (for dealers only)

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Street.....

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Business.....

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A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

SPECIAL attention given to repairing of auto radiators, lamps, fenders, windshields, tanks, and horns of every description. No matter how badly damaged the article may be we repair it to look and serve as new at a great saving of cost. Missing parts for lamps, glasses for windshields, and headlights, put in while you wait. We sell new lamps, radiators, bumpers, horns, windshields, etc., at 50% less than elsewhere. Nickel, silver and brass plating and enameling done at short notice. We always have bargains on hand. Write for particulars. Estimates given. HUDSON AUTO LAMP WORKS, INC., 1648-50 Broadway, New York City. Tel. 8194 Col. and 3864 Col.

FOR SALE—Large fireproof garage with splendid business. Address HARRY, care Motor World.

WILL exchange automobile in fine condition for first-class cruising motor boat. Send photo and full description, SHELDON, 153 4th Ave., Newark, N. J.

CHAUFFEUR, licensed, wants situation; strictly temperate, careful driver; willing worker; will go anywhere. CHARLES VOLLMER, 45 Lincoln Ave., Amsterdam, N. Y.

PEERLESS EXTRA FINE BLACK JAPAN.
Air drying with a high gloss finish on all metal parts of automobiles. One coat covers solid requiring no primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—8 new 16 H.P. two-cylinder opposed engines with Remy magneto and battery ignition and forced feed oiling system. Cheap. Write FRANK HOAG, 91 Elm St., Cortland, Cortland Co., N. Y.

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Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Dries in twelve hours with a high gloss finish on lamps, etc. One coat covers solid. If dull drying enamel is desired please specify. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Look for the Klaxon Nameplate



WHEN the car agent says the car is equipped with a Klaxon—be sure it IS a Klaxon.

YOU can always tell. The Klaxon name plate is never removed. The car maker who Klaxonizes his cars pays from three to eight times as much for the Klaxon as he would have to pay for an unknown "electric horn." He never conceals the Klaxon or the fact that the car is Klaxonized.

If you don't find the Klaxon name-plate the signal isn't a Klaxon. It is probably a "buzzer."

"Buzzers" can be bought by car makers for $1.25. They are the cheapest way in which car makers can say "electric horn." The name plate is often removed; the signal itself is often put under the hood—out of sight. The chance is taken that you don't know warning signals.

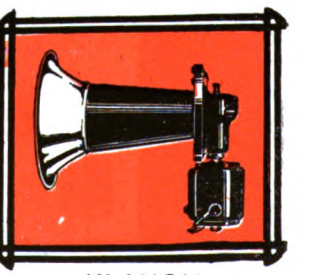


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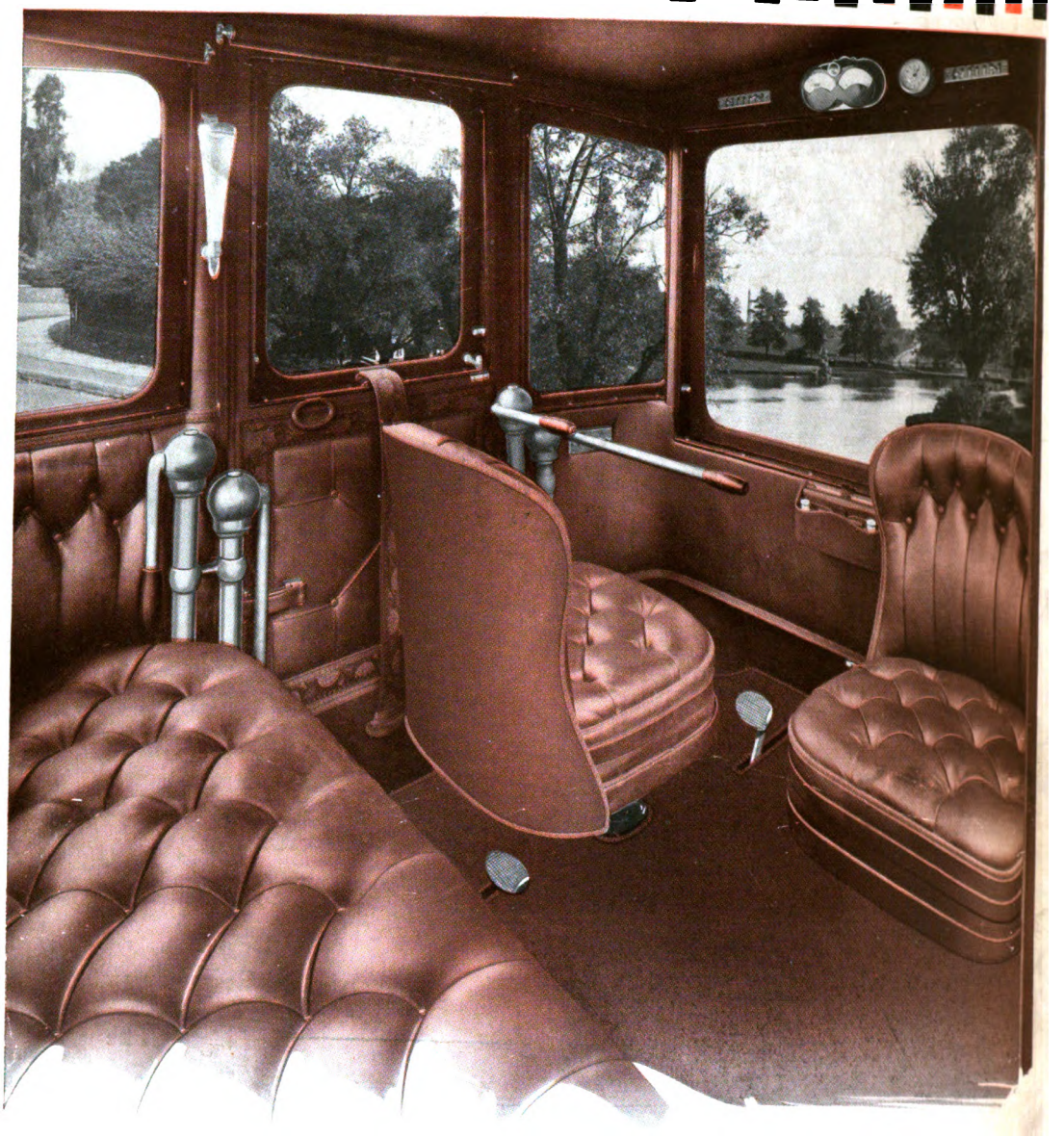
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KLAXON

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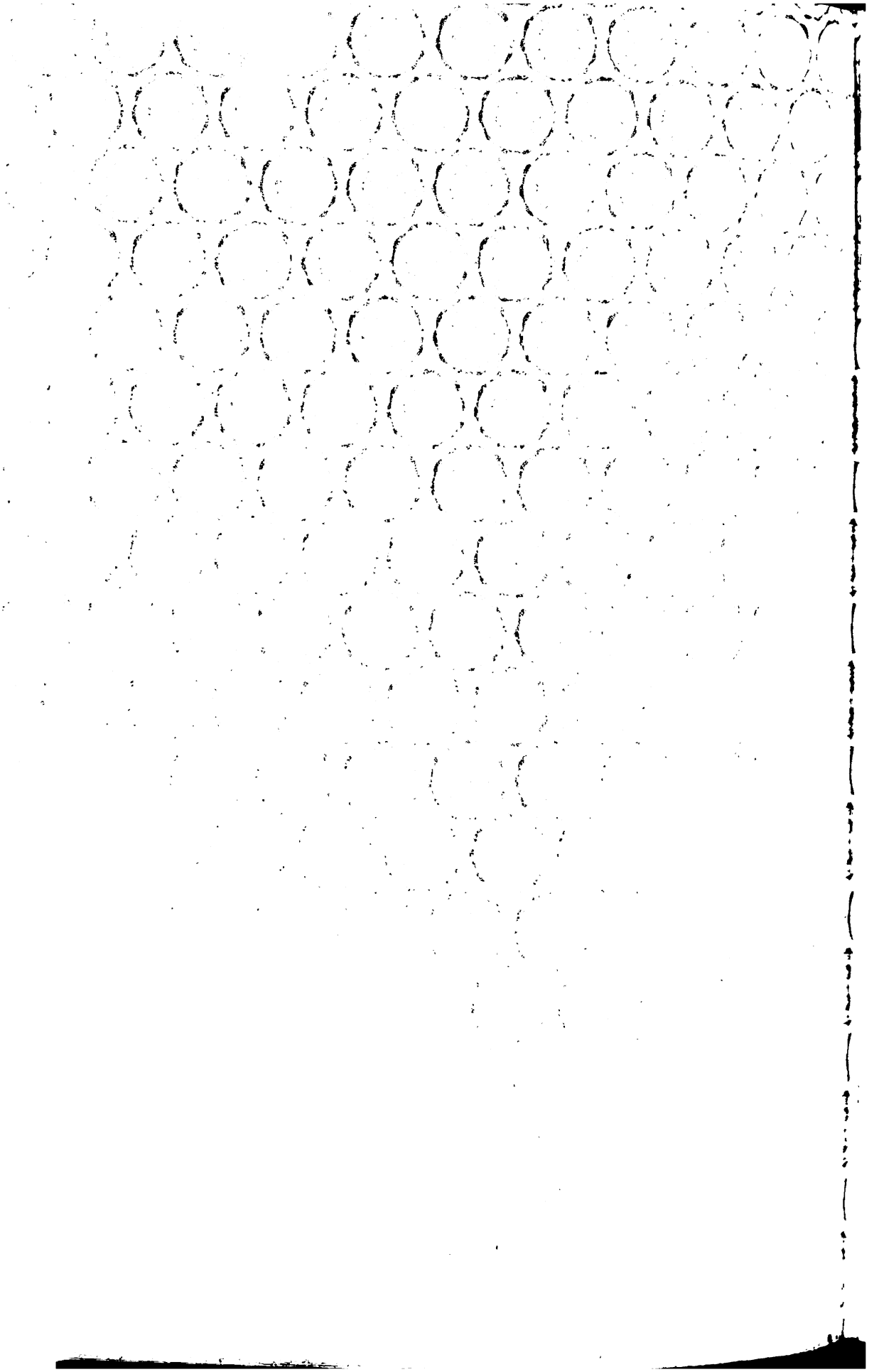
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